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The Place of Overhead Conveyors

What Requirements Have to Be Covered to Meet the
Dictum That Today's Plant Runs
on Wheels

BY ALEX. R. PRIBIL

TWENTY-FIVE per cent for material handling! That's about what American industry spends out of its total payroll. The percentage would be still higher if the automotive industry alone did not already have \$200,000,000 invested in material handling and conveying equipment.

Until five years ago, the principal object of efficiency and plant engineers was to lay out the plant and place the machinery according to the operations and allow each operator plenty of space for storing material on the floors. This method occasioned more or less delay in production and difficulties were encountered in the handling of material. Finally progressive production managers realized the necessity of using every available bit of floor space for manufacturing operations and began to utilize the ceiling or the overhead conveyor as a storage carrier and thus were able to keep

the material moving correspondingly with the speed of production.

Early installations, however, were made in somewhat of a haphazard manner, the main object being to reduce trucking throughout the plant, as floor space for trucking material around a plant had become valuable.

The modern conveyor is laid out to suit a certain line-up of equipment and assembling operations, and the enormous saving which has been effected by its use has placed the overhead conveyor foremost in the modern plant. Buildings are now laid out with a definite routing of materials by conveyors and machines advantageously grouped. Material is not only carried through the building, but it is also carried from one building to another. This arrangement, of course, necessitates that overhead conveyors be built sufficiently high so that men can work underneath them and that

AS president of the Saginaw Stamping & Tool Co., Saginaw, Mich., which is a manufacturer for conveyor builders of conveyor trolleys, chain hoist trolleys, special trucks and industrial truck casters, Alex. R. Pribil approaches the subject of overhead conveyors and equipment for handling material as an expert. He came to this country when 21 years of age from Vienna, Austria, where he was educated as a mechanical engineer. For two years he was with the ordnance department of the Bethlehem Steel Co. and then in the next thirteen years was successively with the Wellman-Seaver-Morgan Co., Cleveland; Brown Hoisting Machinery Co., Cleveland; the Cambria Steel Co. as chief draftsman, the Ford Motor Co., Detroit, as chief designer and checker, the Penberthy Injector Co., Detroit, as general superintendent, the Bowen Products Co., Detroit, Auburn and Cleveland, as consulting engineer and with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., as general supervisor of tools. In 1915 he became general manager of the Carde Stamping & Tool Co., Saginaw, and since 1917 has been president and general manager of the Saginaw company. He admits to having issued to him over 150 patents covering machinery, tools and special equipment. He holds that overhead conveyors and special trucks save 10 to 25 per cent of labor costs for material handling.



ALEX. R. PRIBIL

only occasional dips be made in the conveyor line for loading or unloading material.

Considerable engineering thought has been given not only to the general layout for overhead tracks, but to their strength and permanency in order to make the conveyor free from vibration and give absolute safety to the worker underneath.

A conveyor is an endless chain supported by a single I-beam track, driven at one point at a speed ranging from 10 to 60 ft. per min. It is important that heavy parts carried on the conveyor be properly attached so they can be easily and quickly loaded and unloaded. An overhead conveyor is composed of four units:

- A, Overhead track supported by structural work
- B, Conveyor equipment, including trolleys and roller turns
- C, Chain and drive sprocket wheel
- D, Electric motor and speed reducer.

Only one sprocket should be used for the drive and roller turns used on every corner or bend, to allow for the necessary take-up in the chain. The driving mechanism should be designed to give a continuous and steady pull, which may be accomplished by so-called speed reducers, which should be amply proportioned. The opposite end of the drive-end of the conveyor is called the tail-end and is generally made adjustable to take up the slack in the chain. The bearings of the shaft should be mounted on a sliding guide, operated manually with a screw so that the tension of the chain can be adjusted to take up the slack in the chain.

This, of course, is accomplished by several means, almost all of which relate more to extremely accurate field work than to design, and among these are such items as having the straight runs of the I-beam absolutely straight and at the roller turns having the center line of the web of the beam exactly vertical with the center line of the chain.

In fabricating and erecting steel work for these overhead conveyors, the most successful contractors work to limits which are totally unknown to the structural iron shop and are, in fact, plus or minus 1/64 in. Every bit of this care is for the purpose of reducing chain reaction and undue wear of the various parts. One reason why the No. 458 rivetless chain manufactured by a number of chain manufacturers is so popular is that it has the property of telescoping somewhat on the driven side of the power plant.

In all cases, the conveyor should be driven by electric motors, and these electric motors should be controlled by push button switches. There should be as many push button switches as practical to stop the conveyor at an instant's notice and the conveyor should be started again only after a signal that everything is clear.

The conveyor should be properly guarded and must be properly installed to insure absolute confidence. All floor openings into the drive must be properly protected and, of course, the unloading of material from the conveyor must be carefully studied.

While the overhead conveyor is an absolute necessity for production at minimum cost, nevertheless there are a great many places where conveyors must be supplemented with trucks, as the "modern plant of today runs on wheels," in order to make the moving of material as flexible as possible.



All Iron and Steel Pipe Seriously Corroded by Some Soils

In 1922 the Bureau of Standards began an investigation of the corrosion of piping in soils wherein no stray electric currents existed. In cooperation with various manufacturers and public utilities, some 14,000 6-in. lengths of pipe were buried in soils at 46 locations selected by the Department of Agriculture's bureau of soils as typifying situations of existing pipe networks. Specimens were cut from stock material and, after identification, weighing and examination, were buried in a pipe trench in an approved manner, each trench containing five groups.

One group of specimens was removed from all locations in 1924; a second set in 1926; and the work will be continued at two-year intervals until 1932. Studies of the pipe after two and four years' burial are described in Technologic Paper No. 368 of the Bureau of Standards, by K. H. Logan, S. P. Ewing and C. D. Yeomans. This booklet also contains a full description of the nature of the covering soils.

When any one of the test locations is considered, welded iron and steel pipe of various manufacture differ little in loss of weight or extent of pitting after burial for four years. Wide differences do occur when corresponding specimens from the various localities are compared, ranging from practically no corrosion in a gravelly, sandy loam near Seattle, Wash., to a worm-eaten, deeply grooved appearance in a sandy loam at Denver. It is evident that no one of the commonly used pipe materials is superior under all soil conditions and, further, that serious corrosion may occur in soil free from foreign matter and stray currents. Attempts have been made to correlate the amount of measured corrosion with various physical or chemical characteristics of the soil, such as the hydrogen ion concentra-

tion, soluble salt content, soluble salts in the ground water, and soil resistivity, but without success.

In certain of the soils, cast iron is seriously affected by pitting, developing the phenomenon of "graphitic corrosion," no different from the observed effects of electrolysis, even though it is certain that no electric currents existed in the soils in which the pieces have been buried.

Preliminary results have also been secured on the soil corrosion of iron and steel protected by various metallic and organic coatings, and of several non-ferrous metals.

Great Improvement in Safety at Bethlehem Plants

Safety education of employees of the Bethlehem Steel Corporation has helped to reduce lost-time accidents at Bethlehem plants 54 per cent in the last 10 years. This improvement was announced in connection with the company's fourteenth annual "First Aid and Mine Rescue Meet," held June 23, at Sparrows Point, Md.

Employees from all the Bethlehem steel plants and mines entered into competition in a contest of efficiency in first aid and mine rescue work. Cash prizes awarded by Eugene G. Grace, president of the company, totaled about \$2,000.

Bethlehem now trains about 1000 men in safety and first aid every year. More than 8000 employees have received an intensive course of instruction in this work during the last 12 years.

Marked improvement in accident prevention was effected by the employees during the first quarter of 1928. The company as a whole improved its best previous record by 17.8 per cent. The steel plants alone bettered their safety record by 44 per cent.

Electrical Steel-Mill Developments

Large Number of Main-Roll Drives Installed—Some Units of Particular Interest Because of Methods of Control

BY W. H. BURR*

IN 1920, the electrical development committee reported 44 motors driving reversing mills and 113 mills of various types on which electric motors had been installed, making a total of 157 motors on main-roll drives at that time. In January, 1928, there were reported over 1500 main-roll drive motors in the United States and Canada.

During 1927 there were purchased 122 main-roll drive motors ranging in size from 300 hp. to 7000 hp. Of this number 63 were d.c. motors, 40 were 60-cycle, 17 were 25-cycle, and two were 50-cycle motors. More than half of the motors were d.c. motors, a condition quite different from that existing a few years ago. Eighty of these motors were used in connection with gear drives, which is evidence that the modern reduction gear has proved its reliability to the satisfaction of the steel mill industry.

Recent Main-Roll Drives

During the past year the American Sheet & Tin Plate Co. has placed in operation one of the heaviest power tandem hot-strip mills in the country. This mill is located in the Chicago district. The six finishing stands are driven by individual 2500-hp. 600-volt, adjustable-speed d.c. motors, running at 160 to 320 r.p.m. Power for these motors is supplied from three 3000-kw., three-unit synchronous motor-generator sets operating in parallel. One 3000-kw. set is used to start the six 2500-hp. motors by means of variable voltage control.

There is now under construction for the American Rolling Mill Co., in the Cincinnati district, a hot-strip mill which will be equipped with motors somewhat larger than those mentioned above, making it the largest capacity mill of this type in this country. The total main-roll drive power is 21,800 hp., which includes both a.c. and d.c. main-roll drive motors.

The roughing stands are driven by two 800-hp., one 1000-hp. and one 1200-hp. wound-rotor motors. The motors have been designed so that mechanically their individual parts are interchangeable. This arrangement necessitates only one spare rotor with shaft and one spare stator, due to the fact that these parts can be placed on any of the bases and bearings.

The three intermediate stands are driven by individual 2000-hp., 600-volt, direct current, adjustable-speed motors, operating at 300 to 500 r.p.m. Each of the four finishing stands is driven by a 3000-hp., 600-volt, d.c., adjustable-speed motor, running at 180 to 360 r.p.m.

The main-roll drive motors are supplied from three 4000-kw. three unit, synchronous motor-generator sets operating in parallel. The auxiliary motors are supplied from two 750-kw. synchronous motor-generator sets and the excitation for all main-roll drive d.c. motors and generators is supplied from a 300-kw. synchronous motor-generator set.

Close Control of Speeds

Two mills recently purchased for the Cleveland district include 11 main-roll-drive motors, ranging from 400 to 1200 hp. and a total of 6050 hp., continuous capacity for both mills. Due to the high delivery

speeds, close center distance stands and wide speed range of the motors, it was necessary to incorporate special design features in both motors and control, to maintain the correct speed relation between adjacent stands, so that stretching and buckling of the metal between stands will be eliminated.

There have been purchased for the Birmingham district main-roll-drive motors for a rod mill installation, which include five 6600-volt, 60-cycle, synchronous motors ranging in size from 1300 to 2750 hp. and totaling 9650 hp. The synchronous motors, with the exception of a 2750-hp. motor, are all designed so that they can be started by applying full voltage to their terminals. To reduce to a satisfactory value the starting kva., taken from the power system, reactors are used in connection with the starting equipment for the 2750-hp. motor.

The finishing stand for the rod mill will be driven by a 1200-hp., 230-volt, d.c. adjustable-speed motor. Power for this motor is supplied from a 1000-kw. generator driven by a 2100-hp. motor, which also drives a portion of the mill stands. The combination generator and mill drive represents a new feature for this class of service. The synchronous motors purchased for this installation represent the first large synchronous motors to be applied on a mill of this class.

Replacing Steam with Electricity

There has been purchased by the Illinois Steel Co. a 6500-hp. single-unit reversing-mill motor for the electrification of an existing steam engine-driven mill. A new pinion housing and the motor will be installed on the opposite end of the mill from the present drive. This will reduce the shut-down period of the mill during the change-over to the minimum, due to the fact that the entire equipment can be installed with the mill in service.

One recent improvement in the mechanical features for electrical equipment has been incorporated in this equipment. The individual bedplates for both the reversing motor and the flywheel motor-generator set are of "built up" welded steel construction.

A 4600-hp. 700-volt, single-unit reversing-mill motor for driving a 35-in. roughing mill has been purchased for installation in India (Jamshedpur). The motor will be supplied by a flywheel motor-generator set which includes two 1900-kw., 490 r.p.m., d.c. generators. These generators indicate that continued progress is being made in developing larger generator capacity at higher speeds for reversing-mill service.

There has recently been placed in service by the Carnegie Steel Co., in the Youngstown district, a 4000-hp., 450 r.p.m. synchronous motor for driving a 24-in. continuous billet mill. The motor represents the latest design in synchronous motors for this class of service, in that the motor has a completely fabricated welded frame and bedplate.

New Strip Mills Electrically Driven

A cold-roll strip mill for production of wide material was placed in operation by the American Rolling Mill Co. during the last year. The mill is driven by five 600-hp., 230-volt, d.c., adjustable-speed motors, operating at 400 to 800 r.p.m. For use in connection with this installation there was developed and perfected a special screw-down drive, so that each screw can be motor driven independently of the other screw. If

*Electrical superintendent, Lukens Steel Co., Coatesville, Pa., and chairman electrical development committee, Association of Iron and Steel Electrical Engineers. This is abstract of the committee's report presented at the association's Chicago meeting, June 25 to 28.

it is desired to operate both screws at the same time a magnetic clutch is energized, which causes both screws to turn at the same rate. An inching arrangement is provided which allows the screws to travel one revolution and then stop automatically.

About the middle of last year the Trumbull Steel Co. completed remodeling its 16-in. hot strip mill, which was first placed in operation during 1918. The mill is now laid out for continuous rolling and will produce strip up to 36-in. wide. The driving power applied to the mill was increased by one new 5000-hp. adjustable-speed Scherbius-controlled induction motor, so that the total capacity of driving motors is now 13,000 hp. With the exception of one 300-hp. and two 100-hp. edger motors, which are adjustable-speed d.c. machines, all the driving motors are of the slip-ring induction type, with speed adjustment obtained by the Scherbius system. The four horizontal roughing stands are driven by a 1500-hp. motor, and each of the last three stands is driven by a 2000-hp. motor. The speed of each motor can be adjusted between 270 and 450 r.p.m.

The Scherbius speed-regulating set used with the 5000-hp. motor is of especial interest, as it is the first application using two a.c. commutator-type machines in series. This design permits the use of smaller and higher speed units, and the higher regulating voltage obtainable permits designing the induction motor with a lower secondary current.

Another large strip mill recently placed in operation is that of the Weirton Steel Co., at Weirton, W. Va. This mill will produce strip up to 48 in. wide. There are 11 driving motors, totaling 16,600 hp. The three motors on the roughing stands are 1500-hp., 6600-volt a.c. machines, one of which operates at 200 r.p.m. and the remaining two at 450 r.p.m. There are three edger motors, each 200 hp., 400 to 800 r.p.m. direct current.

The five finishing stands are individually driven by two 2000-hp., 200 to 400 r.p.m. and three 2500-hp., 200 to 400 r.p.m., 600-volt, d.c. motors. Power for the direct-current machines is obtained from two synchronous motor-generators, each consisting of two 1500-kw., 600-volt, d.c. generators driven by one 4200-kva., 6600-volt synchronous motor. The five d.c. motors are started simultaneously by control of the voltage of the four d.c. generators.

Continuous Skelp Mills

Two large mills of the continuous type for rolling skelp have been placed in operation during the past year. One is at the Benwood, W. Va., plant of the Wheeling Steel Corporation. This mill is provided with eight driving motors, all of which are adjustable-speed, d.c. machines. There are four edger motors, three of which are 50 hp. and one 150 hp. These machines are operated from the 230-volt machines, power being supplied to them from a three-unit motor-generator consisting of two 2000-kw., 600-volt generators driven by one 5600-kva., 4000-volt, 60-cycle, synchronous motor. The first two stands are driven by a 500-hp. motor and the remaining eight stands by three 2000-hp. machines.

The other skelp mill referred to is a 27-in.-24-in.-21-in. continuous mill installed by the Bethlehem Steel Co. at the Sparrows Point plant. In addition to producing skelp, this mill is designed to roll sheet bars also. There are four main driving motors. The first is a 4000-hp. 83 r.p.m., 6600-volt, synchronous motor which drives the roughing train. The intermediate train is driven by a second synchronous motor rated 6500 hp. at 187 r.p.m. The third is a 6700-hp. slip-ring induction motor with speed adjustment between 250 and 500 r.p.m., obtained by the Scherbius system. Incidentally, this is the largest Scherbius equipment in the world. The driving motor on the last stand is a 600-volt d.c. machine rated 2600 hp. at 275 to 320 r.p.m.

Rolling H-Beams in High-Power Mill

From the standpoint of total horsepower involved, the new electrically driven beam mill for the production of wide-flange structural shapes at the Lackawanna plant of the Bethlehem Steel Co. is one of the most highly powered mills in this country. The complete equipment consists of three units: a 54-in.

reversing blooming mill, a 48-in. intermediate mill, and a 48-in. finishing mill. The finished sections are produced without reheating of the steel from the time the ingot is removed from the soaking pit.

The ingot is first rolled in the blooming mill to an H-shaped bloom with a web from seven to 12 times the thickness of the web of the finished section. This bloom then passes to the intermediate mill, which consists of two separately driven stands of rolls.

One stand, known as the supplementary mill, has two horizontal rolls, and the main stand has two horizontal and two vertical rolls. The H-shaped bloom enters this intermediate mill with the web horizontal. The supplementary rolls act only on the top and bottom edges of the flange. The horizontal rolls of the main mill effect the reduction in cross-section of the web, while the vertical rolls reduce the cross-sections of both flanges. In the main mill the driving power is applied only to the horizontal rolls, the vertical rolls rotating due to their contact with the beam.

After several passes back and forth through the intermediate mill, the beam passes on to the finishing mill, which also consists of two stands, a main and supplementary, where several finishing passes are made. [This is the same action as that illustrated and described on page 1381 of THE IRON AGE of May 17, in connection with the new Carnegie parallel-flange beam mill at the Homestead works. Editor.]

Unusually Large Motors

The motor for driving the 54-in. reversing blooming mill is the largest single-unit d.c. rolling mill motor which the General Electric Co. has ever built. It is rated 7000 hp. continuously, at 40 to 80 r.p.m. This motor is capable of exerting a maximum torque of 2,400,000 lb. at 1-ft. radius. Direct-current power is supplied from a flywheel motor-generator consisting of one 5000-hp., 275 r.p.m., 6600-volt induction motor, one 50-ton flywheel, and two 3000-kw., 750-volt generators which are operated in parallel. This 54-in. blooming mill is one of the two largest reversing blooming mills in this country.

The intermediate mill has two reversing motors, one of which drives the supplementary rolls and the other the main rolls. The main-roll motor is rated 7000 hp. continuously, at 65 to 125 r.p.m. The supplementary mill motor is rated 1500 hp. continuously, at 65 to 225 r.p.m. The flywheel motor-generator which furnishes power to these reversing motors consists of a 5000-hp., 375 r.p.m., 6600-volt induction motor (duplicate of that on the blooming mill set), two 3000-kw. generators for the main motor, one 3000-kw. generator for the supplementary motor, and one 50-ton flywheel.

This set is a duplicate of the blooming mill set, except that it has three generators instead of two. The finishing mill equipment is the same as that for the intermediate mill. The total capacity of the main equipment for the blooming, intermediate, and finishing mills is just about 71,000 hp.

Changing Over the Rail Mill

The Bethlehem Steel Co. placed an order for new electrical equipment for the Lackawanna rail mill. Engine drives will be discarded and the layout of the mill will be changed. It will consist of a 44-in. reversing blooming mill, the driving motor for which will be rated 7000 hp. continuously, at 50 to 120 r.p.m. Blooms from this mill will go direct to a 36-in. reversing roughing mill, which will be driven by a d.c. motor, rated 5000 hp., continuously, 50 to 120 r.p.m.

Power for these two reversing motors will be obtained from a single flywheel motor-generator consisting of one 8000-hp., 375 r.p.m., 6600-volt induction motor, two 3000-kw., 375 r.p.m., 750-volt generators operating in parallel, to supply power to the 7000-hp. blooming mill motor, two 2200-kw., 450-volt generators operating in series, to supply power to the 5000-hp. roughing mill motor, and one 75-ton flywheel.

More Synchronous Motors Being Used

Increasing use of synchronous motors for main roll drives is noteworthy. Seven motors sold by the General Electric Co. during 1927 totaled 12,600 hp. The largest of these is rated 5000 hp., continuously at 100 r.p.m., and 2200 volts, and is used to drive a 19-in.

continuous sheet bar mill at the Kokomo, Ind., plant of the Continental Steel Corporation.

A motor of the same horsepower rating but at 240 r.p.m. is used to drive a 51-in. piercing mill installed by the Standard Seamless Tube Co. at Ambridge, Pa. This is the largest seamless tube mill drive in the world.

The Standard Seamless Tube Co. has placed in operation also a 32-in. reversing bar mill which is driven by a 2150-hp., 43 to 85 r.p.m., 550-volt d.c. motor. Power is derived from a synchronous motor-generator consisting of a 4200-kva., 2200-volt synchronous motor, direct-connected to two 1000-kw., 275-volt, d.c. generators operating in series. This is the first installation of a reversing rolling mill motor deriving its power from a synchronous motor-driven generator.

At the Union plant of the Bourne-Fuller Co.,

Cleveland, a 10-in. merchant mill has recently been placed in operation which, from the standpoint of the electrical equipment, is of particular interest. The mill has eight driving motors totaling 3400 hp. Five are 500-hp., 267 to 800 r.p.m., 230-volt, d.c. machines and three are 300 hp., with the same range of speed adjustment.

The four stands driven by the three 300-hp. motors and one of the 500-hp. motors are in tandem and placed on very close centers, so that the metal being rolled is in all four stands simultaneously. For this reason, special provision has been made in the control provided for these four motors, to reduce the speed regulation (that is, the change in speed from no load to full load) of each machine to a minimum, and to maintain within close limits the relative speeds of all four machines.

STARTS USING HOT METAL

Improved Hamilton Furnace Now Connected with Armco Middletown Works

INAUGURATION of the movement of hot metal from the blast furnace of the Hamilton Coke & Iron Co., at Hamilton, Ohio, to the open-hearth furnaces of the East Side works of the American Rolling Mill Co., at Middletown, Ohio, was formally celebrated June 25 when a party of officials and guests of the two companies journeyed on special cars from Middletown over the newly-constructed tracks of the Baltimore & Ohio Railroad to Hamilton where they saw molten metal taken from the furnace and sealed in ladle cars. The return trip was made to the East Side works at Middletown, where the party inspected the plant. A luncheon was given by the officials of the American Rolling Mill Co., at which brief addresses were made by Daniel Willard, president Baltimore & Ohio Railroad; H. C. Blackwell, president Union Gas & Electric Co., Cincinnati; and H. B. Rust, president Hamilton Coke & Iron Co.

The plant of the Hamilton Coke & Iron Co., which originally consisted of a blast furnace owned by the Hamilton Furnace Co., has been enlarged and improved. The program of improvements included the remodeling of the blast furnace, hot blast stoves and gas cleaning system, installation of equipment suitable for the delivery of hot metal to Middletown, 12 miles distant, and the construction of a modern by-product coke plant comprising 45 14.8-ton Koppers ovens of the Becker type with a capacity of 1200 tons of coal each day.

The blast furnace with a rated capacity of 550 tons daily is equipped with a McKee revolving distributor. The hearth has been enlarged from 16 to 17 ft. in diameter. The gas cleaning system, after the dust catcher, is entirely new. The gas, after passing through the dust catcher, is cleaned by an A. B. C. vortex collector furnished by H. A. Brassert & Co. The collector removes by dry process a large percentage of the dust remaining in the gas and delivers hot gas of sufficient cleanliness to be suitable for use at the boilers. By centrifugal action the collector separates the dust from the gas, and the dust is collected in a receptacle at the bottom. At intervals of about 12 hr. the dust is dumped into railroad cars. The clean gas passes out at the top of the collector, part of it going to the boilers without further cleaning and the remainder going to a Feld five-stage scrubbing tower, 12 ft. in diameter, where it is wet washed for use at the stoves.

After leaving the Feld scrubber, the gas passes through an A. B. C. vortex eliminator and thence to the stoves. The action of the eliminator is similar to that of the collector, its function being to separate the gas from the entrained moisture and sludge.

Three of the four stoves were relined to provide the necessary increase in regenerative capacity required by the furnace. The stove shells, each of which is 20 ft. in diameter and 92 ft. high, have been left in-

tact, but in the relining are said to represent an innovation in stove design from anything now in operation in this country. The arrangement of the gas passage, together with the center combustion chamber, conforms to the Diehl type stove. The checkers of the Brassert type, consisting of octagonal shapes with cylindrical openings in the center, result in a series of square and round openings from the top to the bottom of the checker work. Insert columns of specially shaped fire brick have been placed in these openings, the size of the inserts being varied to effect a somewhat higher and more uniform gas and blast velocity throughout the checkers than has been employed ordinarily in the past. It is estimated that an increase of 90 per cent in heating surface per stove is obtained with these checkers as compared with the type of stoves previously used at this furnace. Incidentally, the four stoves have been equipped with Steinbart pressure burners for economical and efficient gas burning.

The coke plant will produce furnace coke and also coke for industrial and domestic uses. The surplus gas from the ovens is delivered to a 5,000,000-cu.-ft. waterless gas holder, from which it is taken by the Columbia Gas Supply Co. A Koppers phenol recovery plant and a Bartlett-Hayward centrifugal benzol absorber are features of the by-product plant.

Three specially-designed mixer ladles of the Pugh type, each of 150 tons capacity, will carry the molten metal from the furnace to the open-hearth furnaces at Middletown. The ladles have been double-lined with fire brick and are capable of holding the metal for 48 hr. A view of one of the ladle cars was given on page 1746 of *THE IRON AGE* of June 21.

Because of the concentrated load of metal, plus the unusually heavy weight of the ladle cars, it was necessary for the Baltimore & Ohio Railroad to design and build a special bridge over the Miami River en route from Hamilton to Middletown. For a ladle car to make the round trip from the furnace to Middletown requires about 2½ hr. and it is estimated that an average of four trips every 24 hr. will be made.

The Hamilton Coke & Iron Co. is the successor to the Hamilton Furnace Co., which first built a blast furnace at Hamilton in 1907 to make foundry pig iron to be sold in the open market. Ten years later the blast furnace was rebuilt, but for a long period previous to its purchase by the Hamilton Coke & Iron Co. was idle. Today, under its new joint ownership by the American Rolling Mill Co. and the Koppers Co., it enables the former to reduce its steel production costs by using the hot metal for its open-hearth furnaces at Middletown instead of securing cold pig iron from the Armco furnaces at Columbus.

Foundry owners of Worcester, Mass., on Monday, June 25, met at the Hotel Bancroft, of that city, to form a foundry council of the chamber of commerce. Roscoe H. Goddard, general secretary of the chamber, presented the plan. Most of the foundrymen present were in favor of it and concrete developments are expected soon.

Magnets Control Welding Arc

Produce "Electronic Tornado" and Stabilize Carbon Arc—
Joints Welded at High Speed Have Superior
Ductility, Appearance and Strength

BY A. F. DAVIS*

IT has long been known that the electric arc is normally a difficult phenomenon for the welder to control. It creates its own magnetic field and the passage of the welding current through the parts being welded creates other magnetic fields of variable direction. The arc, therefore, tends to wander around seeking the path of least resistance. When studying this characteristic in an effort to stabilize the arc, research investigators in the Lincoln Electric Co.'s laboratory many months ago found that, after superimposing a strong magnetic field on the arc flame, the arc travels through variable fields without disturbance. This magnetic control appears to give the arc a gyratory motion and the controlled arc has been properly called an "electronic tornado."

At the time it was thought to be merely an interesting scientific phenomenon of no particular commercial value, but experimentation was continued. In December of last year a series of welds were produced of such extreme ductility and smoothness that more persistent efforts to apply it to commercial machines were justified.

To illustrate the kind of metal remaining after melting under a carbon arc controlled by a strong, induced magnetic field (the electronic tornado), some welds were made in $\frac{1}{2}$ -in. plate. In appearance these welds have a series of ripples shaped like fish mouths, characteristic of the highest uniformity in the joint. This is partly due to the higher speed of welding and, in part, is inherent in the process.

The welded joints were then sawed out in the form of long bars. Some of these resultant bars were twisted through 1080 deg., or three complete revolutions, without showing any indication of fail-

ure (Fig. 1). Other bars cut from welds were twisted cold and tied into knots without any sign of fracture. Welds on heavier plates were given bending and twisting tests which could not even be approached by welds made by ordinary methods. In a series of welded bars tested in tension there was not a single failure in or alongside the weld. It was quite apparent that there is no impairment of the strength of the parent metal by the new process.

The three microphotographs show common steel plate, metallic arc weld and electronic tornado carbon arc weld, respectively, all at the same magnification and etching. They show in the clearest possible manner the pronounced difference between the common arc weld and the new process. It will be observed that the grain size in the new process is exceedingly fine and uniform, whereas in the metallic arc weld it is irregular and coarse. The crystal structure of the electronic tornado weld is almost identical with that of original mild steel; the only discernible difference is in the refined size of the crystals themselves.

The structure of metal melted by this new process is very similar to that of a highly refined low-carbon steel brought about by rolling or forging and a suitable heat treatment.

Such success has been had in commercializing this invention that it is now being applied to the manufacture of pipe, tanks and the welding of structural steel. To illustrate the adaptations, an automatic machine for welding a special piece of oil field equipment is shown, with some of the work delivered.

These are corner clamps for oil well derricks, made of ordinary pipe instead of timber. Each clamp is made of three pieces; two of them are alike, a square plate with central portion bent into a 125-deg. arc and two

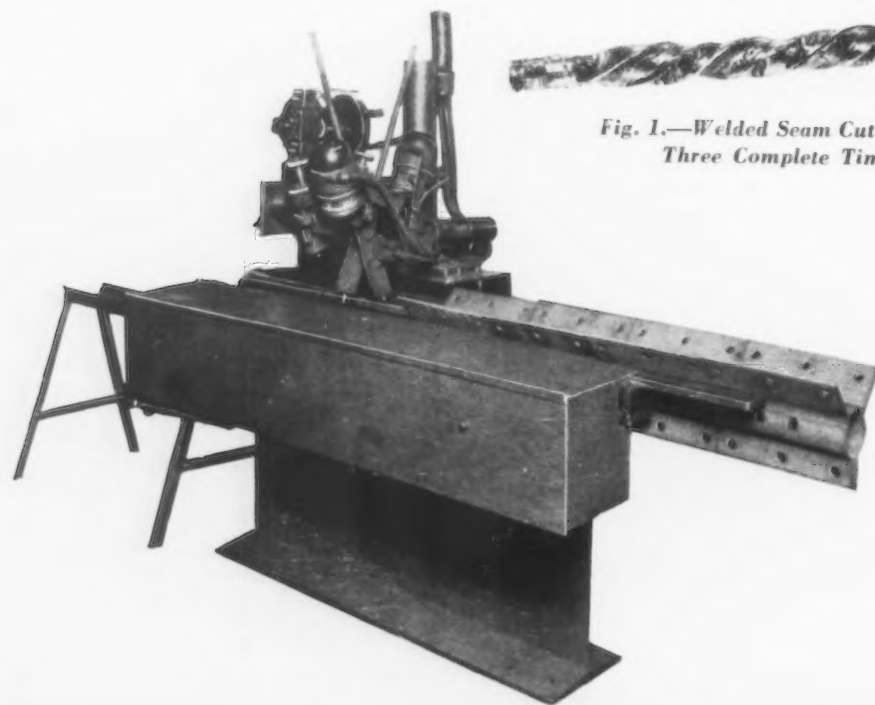
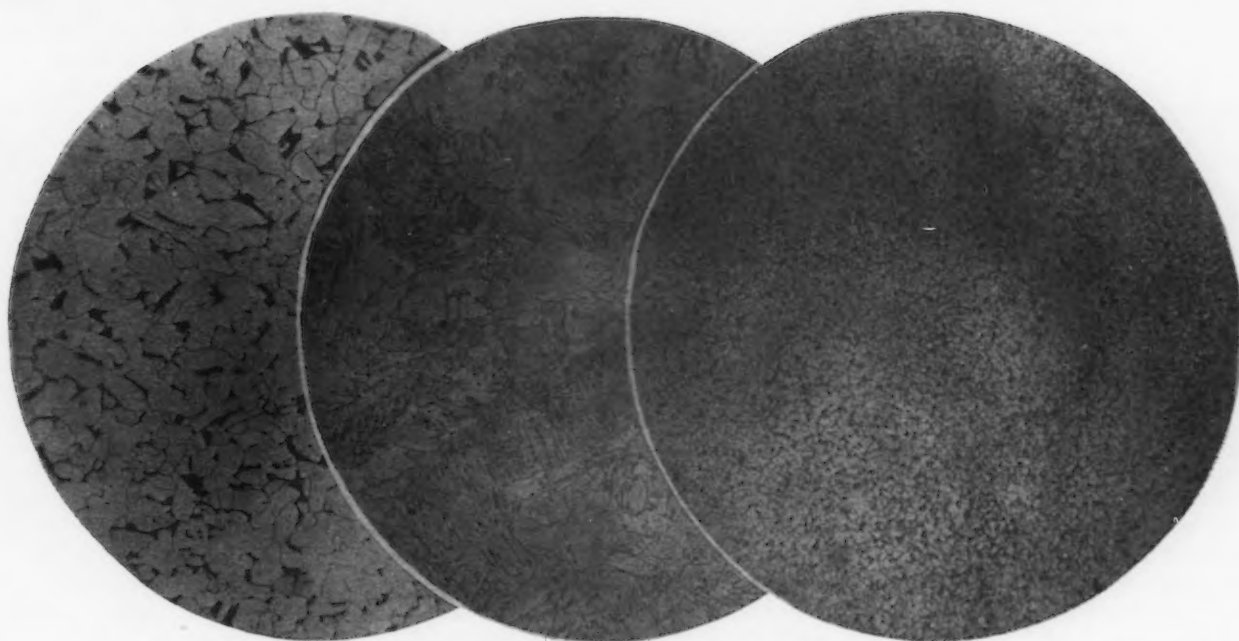


Fig. 1.—Welded Seam Cut from $\frac{1}{2}$ -In. Plate, Twisted Three Complete Times without Cracking

Fig. 5.—Automatic Machine for Making Angle Clamps for Oil Well Derricks



Figs. 2, 3, 4.—Microstructure, at 100 Diameters, of Steel Plate, Metallic Arc Weld and Electronic Tornado Carbon Arc Weld

wings back in radial direction. The third piece is a 90-deg. portion of the cylinder with short wings, resting on the two others in the assembly shown in Fig. 5.

The clamps thus assembled are fed into the welder and are carried under the arc in a continuous line by a chain drive on which there are dogs set at intervals. These devices are concealed by sheet-metal guards.

It will be noted that there are two of the new type welding heads with their electrode holders crossing each other at a sharp angle. This construction is of peculiar interest, for, with an uncontrolled arc, it would be impossible to operate two flames in such close proximity. One would continually blow the other out. With

the electronic tornado welding head, however, they work smoothly and without conflict.

This new machine is placing double welds at the rate of better than 40 ft. an hour for each head, which is an exceptionally high speed. No filler rod is used; the arc from the carbon electrode fuses the wings of the top plate into the metal below.

In general the cost of welding $\frac{1}{2}$ -in. plates, including operators' time, electric current and carbon electrodes, will range from 3c. to 7c. per ft., depending principally upon the cost of setting up the work and the amount of it that is to be done. The cost of welding plates of other thicknesses will be in direct proportion.

Maintained Uniformity in Malleable Iron Castings

A notable showing in uniformity in high physical properties of malleable iron castings is disclosed by the record of the Fort Pitt Malleable Iron Co., Pittsburgh, covering a period of 15 months to and including March of this year. This record, part of the exhibit of the company at the last annual convention of the American Foundrymen's Association in Philadelphia, shows that in 1104 heats made during this period there was only one month in which the average of the tensile strength dipped under 58,000 lb. per sq. in.; that in all but three months the average yield point was above 38,000 lb. per sq. in., and only in two months did the percentage of elongation fall below 25 per cent. The machinability of the iron was, it is emphasized, in no way affected by the high physical properties.

Prizes Announced for Foundrymen's Apprentice Contests

Owing to some unexplained delay in transit, steel castings for the apprentice molding contest conducted by the American Foundrymen's Association at its Philadelphia convention in May did not arrive in time to be considered. This limited this feature of the convention and exhibition to an examination of the patterns and gray iron castings submitted.

All the patterns reflected credit on those who made them and all might be used with perfect propriety in commercial practice. First prize was awarded to No. 61, made by Frank F. Cuzzone, General Electric Co., Schenectady, N. Y. Second place was given No. 2, made by Arnold Behrens, Milwaukee Pattern & Mfg. Co., Mil-

waukee. Third place was awarded to No. 31, made by John Anderson, John Deere Harvester Co., Moline, Ill. The judges were Joseph Goostray, Hunt-Spiller Mfg. Co., Boston; Pat Dwyer, Foundry, Cleveland, and John D. McDonald, Bucyrus-Erie Co., Erie, Pa.

In the gray iron casting contest, first prize was given No. 94, made by Peter G. Bathgate, Brown & Sharpe Mfg. Co., Providence, R. I. Second place was given No. 74, made by George Shuster, Olney Foundry Co., Philadelphia, and third prize was awarded No. 75, made by Antillo Rocchi, Cresson-Morris Co., Philadelphia. The judges in this contest were J. F. Murphy, University of Pennsylvania, Philadelphia; B. D. Fuller, Whitehead Brothers Co., Cleveland, and Pat Dwyer, Foundry.

Officers of the Purchasing Agents' Association

At the thirteenth annual convention of the National Association of Purchasing Agents held at Kansas City, officers were elected as follows:

President, A. M. Bowman, general purchasing agent Humble Oil & Refining Co., Houston, Tex.

Vice-presidents: Leonard S. Leavy, purchaser of supplies, San Francisco; C. F. McAuliff, Texas Electric Railway, Dallas; J. R. Whitehead, Fairbanks, Morse & Co., Chicago; C. R. Ramage, Diamond Chain & Mfg. Co., Indianapolis; Christie T. Clark, Rolph-Clark-Stone, Ltd., Toronto; H. R. Cranford, Toledo Edison Co., Toledo, Ohio; W. M. Kerrick, Mengel Co., Louisville; T. W. Harris, Jr., E. I. du Pont de Nemours & Co., Wilmington; Paul R. Brennan, Stafford Co., Readville, Mass., and Lewis A. Jones, New York Power & Light Corporation, Albany, N. Y.

Uniformity in Duplex Steel

Quality Product Obtained by Controlling the Temperature of the Steel Bath and Fluidity of the Slag Just Before Molten Pig Iron Is Charged

BY FOLKE W. SUNDBLAD*

DUPLEXING has been given the least scientific attention of all steel-making processes, probably because the grade of steel that has been made in this way has satisfactorily filled its purpose. Keener competition, with subsequent demands for better quality, has forced steel makers to give the matter greater attention.

The advantage of the duplex process has been frequently mentioned, and is the saving in time, as it requires from 3 to 4 hr. to produce 200 tons of steel from a single furnace which can make only one-fifth as much using a cold charge. A poorer grade of pig iron can also be converted into a higher grade of steel at this rapid rate.

The disadvantages are the double conversion and handling costs; the decrease in yield, due to the increased oxidation and mechanical losses; and the variation in quality of the different heats.

While the duplex process can be worked in different ways, one common American practice is to pour enough full-blown metal into a tilting basic open-hearth furnace to be able to tap out about 200 tons of finished steel and still have 50 or 60 tons left in the furnace. When the required amount of blown metal is poured and enough scale and lime have been charged and melted to make a highly basic and oxidizing slag, a so-called "jigger" of raw basic iron is added from a cupola or mixer. The weight of the jigger depends upon the desired carbon content in the finished steel.

When this iron is introduced, a strong boiling and heat evolution takes place, due to reaction between iron oxide in the scale and carbon in the pig iron. Carbon monoxide is formed and passes up through the metal and slag, causing the charge to boil and foam, and thus forces the slag to overflow through cinder notches. While the bath is violently stirred the phosphorus in the metal is also eliminated and joins with the lime slag, much of which is ejected into the cinder boxes.

After this reaction, a test is generally sent to the laboratory for analysis, and, if the return is satisfactory and the temperature correct, the heat is tapped.

On the surface it seems a very simple matter from a practical standpoint to make a duplex heat. In reality each charge contains unstable conditions which influence the quality of the product. Consequently the manufacture of a duplex heat relatively free from gases is a rather complicated proposition.

The factors which vary for each charge (or "fill-up") are the temperature and the chemical composition of the blown metal. The temperature depends primarily upon the silicon in the converter charge. If the blown metal is too cold, it cannot be helped. If too hot, it can be cooled by judicious addition of scrap into the vessel.

If the temperature of the molten bath in the open-hearth furnace is too high at the time the iron is added, too wild a reaction, an uncontrollable foaming slag and a subsequent carbonless bath will result. While carbon can be added in the ladle, the metal will probably be too high in phosphorus, since phosphorus is eliminated best when carbon is present.

On the other hand, too low a bath temperature will delay the reaction, sometimes 8 to 10 min., but then it suddenly starts, and with such a violent boil that even a thin slag will be whipped into one too thick in a few seconds. This prevents the slag from overflowing, and such a heat is liable to be high both in phosphorus and sulphur.

From these considerations it is seen that the temperature of the bath at the time the jigger is added should be properly controlled.

Variable chemical composition in the blown metal is also important, since the furnace operator must adjust the nature and the fluidity of the slag to take care of the impurities to be eliminated. Fluidity of the slag depends upon the furnace temperature, and its content of basic and oxidizing agents.

Temperature and fluidity are directly proportional to each other; increase the temperature and fluidity also increases.

If the sulphur in the blown metal is above 0.06 per cent, one practice calls for adding manganese to the metal remaining in the furnace after pouring, but before filling up. Otherwise the fastest way to decrease the sulphur is to run the furnace with an extremely basic and oxidizing slag together with a very oxidizing flame. These conditions should prevail throughout the filling-up stage, except during the last few minutes just before the iron is added, when the flame is lowered somewhat, allowing the relatively thin slag to cool a little. This is done to avoid unnecessary foaming of the slag when the iron is introduced, at which time a full flame is again turned on. By producing a succession of reactions of moderate intensity, it is possible to run off quantities of slag rich in sulphur.

The proper way to add iron to a bath of average chemical composition, however, is to give it a sufficient amount to produce a reaction that raises the slag to overflowing without tilting the furnace much. When the bath is settled again, a second amount may be introduced, producing not quite so strong a boil. After this one a final jigger can be added to raise the carbon content of the bath, producing only a mild boil. The metal should then be sufficiently high in carbon so that no additional iron is needed before the preliminary test is reported, and in that way the heat is given proper time to settle.

To insure greater uniformity of the finished product it is necessary to find a point in the operation that can be made stable for all heats. This is possible if we control the temperature of the bath and the nature of the slag. In other words, if we can tell in advance what kind of reaction we are going to have, the problem is solved.

From a practical standpoint it is possible to regulate the operating conditions so that, by the time all the blown metal is poured into the furnace, the slag has a certain fluidity and the bath a certain temperature. It is thus possible to make this stage in the operation a stable point for all heats. In practice this depends a great deal upon the fuel. Tar, oil or producer gas are undoubtedly best. Coke oven gas in combination

*Woodlawn, Pa

with any of these would make it much more difficult, if not impossible. Due to its lightness this latter gas has the tendency to raise the flame, and, when used in a duplex furnace with a bath of a big area, the result is too great a difference in the absorption of heat at the incoming and outgoing ends. In order to prevent such a flame from raising toward the roof, more air and steam must be used than otherwise; thus the operator is handicapped if conditions call for a less oxidizing flame.

Available literature covering this process, while mentioning the variations encountered in operation,

makes no attempt to state a cure. Some operators are satisfied that the working of a duplex heat and the subsequent result are not subject to scientific control but are solely dependent on their practical experience. Valuable results would undoubtedly be gained by some research work aiming to find a working relationship between different slags and the intensity of the reaction. It would then be possible, by taking a slag test immediately before the iron is introduced, to determine from its color and density of structure when the "stable point," as defined above, has been reached and the time is ripe for adding the molten pig iron.

Low-Manganese Plates for Shipbuilding Save 10 Per Cent

Lloyd's Register Approves "D-Quality" High-Tensile Steel Used By
British Navy for All Important Hull Members

BY SIR WILLIAM J. BERRY*

THE first ships wholly of steel for the Royal Navy were 18-knot despatch vessels ordered in 1875, of 3730 tons displacement, and were built of steel produced by the open-hearth process. It was found that mild ductile steel of the kind required for shipbuilding purposes was produced with much greater uniformity by the open-hearth than by the other methods, and it was this process which, in the end, eclipsed all its rivals, as far as the shipbuilding supplies were concerned. In 1877 Lloyd's formally sanctioned the use of mild steel for mercantile vessels, and issued the standard tests for steel.

Mild steel has held almost undisputed sway for the last 40 years for shipbuilding purposes, and it is worthy of note that the standards adopted by the Admiralty and Lloyd's for mild steel have remained unaltered for that period. Ever since it became possible to compute with some degree of accuracy the stresses to which ship structures were subjected in service, it has been the aim to keep such stresses within what might be loosely termed the elastic range. The assumption had usually been in design work that an elastic limit of about half the ultimate strength could safely be taken, notwithstanding the fact that the figure was seldom determined. The attached table shows that the true limit of proportionality of mild steel is far less than ordinarily assumed.

Use 1.25 Per Cent Manganese Steel for High Strength

In the case of commercial structural steels as ordinarily produced, the proportional range of elasticity is extremely variable, and might almost be said to be an accidental property of the steel; but this feature is subject to control if, for a specific purpose, a definite proportional limit is desired. This point was investigated with great thoroughness at the time the Admiralty was drawing up the specifications for the steel for some of the recent warships. With the help of some of the foremost steelmakers in the country, a steel has been evolved for Admiralty use (now widely known as D quality), in which a proportional limit of 38,000 to 45,000 lb. per sq. in. is associated with an ultimate strength of 83,000 to 96,000 lb., without sacrificing to any appreciable extent the ability of the steel to withstand ordinary manipulative treatment in a shipyard. The tests actually specified are: (a) A minimum proportional limit of 38,000 lb. per sq. in.; (b) a minimum elongation of 17 per cent on 8 in.; (c) a bend through 180 deg. around a curve whose radius is one and one-half times the thickness of the specimen tested.

All these requirements are regularly exceeded in supplies obtained by the Admiralty under its contracts. To secure such results great care has to be paid in the first place to chemical composition, and in the second place to the choice and control of the finishing temperature at the rolls. As regards chemical composition, advantage is taken of the beneficial effect of increased percentages of manganese, in elevating the propor-

tional range without detracting from ductility. A fairly representative composition would be carbon 0.33 per cent, manganese 1.1 to 1.4, silicon 0.12, sulphur and phosphorus being kept to about 0.03 or 0.04 per cent.

The temperature of finishing the rolling is all-important, as it enables a normalizing effect to be obtained without actually going through the procedure of a separate treatment. For steel of the composition given, a temperature of 830 deg. to 860 deg. C. (or rather above the critical range) is the one to be aimed at.

Rapid Method of Determining Proportional Limit

A word should be added as to the method stipulated for recording the proportional limit of elasticity. To do this with scientific precision would necessitate plotting a curve for each specimen tested, and locating the particular point at which the load-extension curve departed from the straight line. Obviously this is out of the question where thousands of tons of steel are passing under inspection at a rapid rate in the early stages of construction of a ship. After hundreds of specimens had been dealt with under extensometer test in the preliminary investigations mentioned, a simple and expeditious system was evolved which provided all the relevant information. The Ewing extensometer was the instrument and this registered with fair accuracy to 1/50,000th of an inch. To insure absence of slipping of the grips when the lower reading was taken with an ordinary commercial test bar, a load of 4500 lb. per sq. in. was first put on, and a reading taken; the load was then gradually increased to 38,000 lb. per sq. in., and a second reading taken. The load was then reduced to 4500 lb. per sq. in., and a third reading recorded. To meet the specification this final figure was not to exceed the original reading by more than 0.0004 in. This system, which is now in daily use at many of the largest steel works in the country, has given complete satisfaction to both the makers and the purchasers.

In 1925, Lloyd's issued a memorandum on the subject of "Special Quality Steel for Merchant Shipbuilding," sanctioning the use of steels similar in character to that adopted by the Admiralty. Another specification of a similar character is followed by Alfred Holt & Co. In both these cases, the elongation and bend tests are the same as for mild steel. The method of measuring the proportional limit follows in every particular that laid down by the Admiralty for D-quality steel. It is interesting to note that these new types of steel are also being adopted for merchant shipbuilding on the Continent.

D-Quality Steel Fabricated by Ordinary Methods and Equipment

While D-quality steel is of such great value for the pure strength girder in ships, it must not be supposed that the modern warship is wholly of this steel. For minor and partitional bulkheads, for the ends of a vessel

*An "Introductory Note" read before the Institution of Civil Engineers, London, June 6.

where the bending-stresses are small, for unimportant flats and decks and for deck structures, the cheaper mild steel still fills its particular niche. In small vessels also, where longitudinal stresses are of little importance, the initial and subsequent cost of using the higher quality of steel could not be justified. It must also be remembered that steels of the types described suffer to some slight extent from the defects of their special qualities. Ease or difficulty in flanging and bevelling is dependent entirely on the low or high value of the yield point. Under the shearing, punching, and drilling machine, one cannot expect quite the same ease of operation as with mild steel. Owing also to the higher carbon and manganese content, heating and flame cutting, now so common in shipbuilding, have to be carried out with somewhat more circumspection. It is surprising, however, how quickly the building employees adapt themselves to the slightly modified materials and conditions, and, as far as the Admiralty is concerned, it is exceedingly rarely that any case is reported of failure in working.

Discussion

In the discussion of this paper it was brought out that the first D-steel was normalized, but experience showed that with the proper attention to finishing temperatures the ductility and elastic limits were higher than the specified value. Such high-tensile steel is now used for all important parts of British warships, and

no defects have developed in the vessels during service. Holt & Co. have built a commercial ship, 50 per cent of the structure being made of high-tensile steel, with a saving in weight of 10 per cent. A further 4 per cent saving is anticipated in future ships. One speaker was of the opinion that heat treatment would equalize the carbon content and improve transverse and longitudinal uniformity. He also felt that heat-treated mild steel would be less subject to brittleness than the high-carbon steel required. However, in the navy yards no trouble has been experienced with brittleness. Sir William Berry said that no studies of the fatigue properties have been made, because the alternating stresses in ship hulls are very slow, and he has never seen a fatigue failure in service.

Physical Properties of Shipbuilding Steels

Steel	Ultimate Strength lb. per sq. in.	Yield Point, lb. per sq. in.	Limit of Proportionality, lb. per sq. in.
"D"	83,000 to 96,000	56,000	{ 38,000 minimum 45,000 average
"HHT"	83,000 to 96,000	About 50,000	.....
"Lloyds" (new)	74,000 to 85,000	.....	34,000
"HT"	74,000 to 85,000	45,000	.....
"Holtz"	65,000 to 76,000	.....	34,000
Mild steel, old Liverpool Register ..	63,000 to 72,000	Average about 18,000	
Mild steel, old Admiralty ..	58,000 to 67,000		
Mild steel, old Lloyds Register	63,000 to 72,000		

What to Require in Foundry Coke

Physical Tests Held More Important Than Mere Chemical Qualifications—Foundrymen Discuss Coke Specifications

PRESENTING at the American Foundrymen's Convention at Philadelphia a review of the present status of coke specifications, W. A. Selvig, United States Bureau of Mines, Pittsburgh, and secretary of the committee on coke specifications of the American Society for Testing Materials, mentioned four items which have to be watched carefully. These are: (1) proper sampling; (2) chemical analysis, particularly with regard to sulphur and as to sulphur in the ash; (3) physical tests, with discrimination between what is needed and what is not needed; (4) behavior of the coke in service tests, particularly where it has to be handled several times.

These matters were taken up in the 1906 report of the coke committee of the A. S. T. M. Little has been done to amplify the study since that time, but the 1927 Book of Standards of the society contains sampling standards.

Under present sampling practice about 1 cu. ft. of coke is picked off the surface of each carload or two, by breaking off, from various locations all over the car, pieces about the size of a walnut. As a matter of fact, good sampling would mean much more than 1 cu. ft. and much more than a surface picking. Practical conditions, however, make this arrangement acceptable. Generally speaking, the volatile matter of the coke should not exceed 2 per cent; the fixed carbon should be at least 86 per cent; ash should be 12 per cent or less and sulphur not over 1 per cent.

Several specifications for coke, put together by various organizations for various purposes, differ markedly from the above. The maximum volatile matter varies from 1 to 3 per cent; carbon, from 85.8 to 87 per cent; ash from 10 to 12 per cent; sulphur has a maximum from 0.8 to 1.3 per cent and phosphorus has a maximum from 0.25 to 0.5 per cent. Moisture is variously limited from 0.5 up to 3 per cent.

It was pointed out that the by-product process has rendered available for coke production coals which previously had been considered unsuitable.

Physical tests must be correlated with the properties required under use. Porosity may vary from 40 to 60 per cent, with an average of 50. The apparent specific gravity should never be less than 0.8 and may

go up to 1.5. The corresponding true specific gravity will lie between 0.8 and 2.1. As to the shatter test, a 50-lb. sample is dropped four times from a height of 6 ft. on a cast iron plate and the breakage determined. Under this condition from 44 to 77 per cent of the coke may remain on a 2-in. screen. One specification requires that at least 70 per cent stay on the screen. Right here a note of warning was thrown in, as to precise definitions in connection with all of these physical matters.

In the tumbler test, a 25-lb. lot of coke between 2 in. and 3 in. is revolved at 25 r.p.m. for 1400 revolutions in a drum. The breaking-up effect of this treatment is determined by passing the resultant coke over screens of varying mesh. Tests show that from 70.6 to 77.5 per cent will remain on a ¼-in. screen. The speaker believed that this test had no value not already taken care of by the shatter test.

The coke committee of the American Society for Testing Materials takes the view that the present coke standards are old and require modification to bring them up to date.

In the discussion of this report, which was read by James T. MacKenzie, American Cast Iron Pipe Co., Birmingham, one speaker advocated buying coke by brand and leaving its qualities up to the coke manufacturer. He expressed the opinion that this man is as jealous of the reputation of his brand as the foundryman is anxious to secure the coke he wants. He raised the question of fusible ash, which might have a bad effect through cutting the cupola lining.

Practice of Large Users

Combustion tests made by the General Motors Corporation were referred to by Robert H. Wise, metallurgist Semet-Solvay Co., Syracuse, N. Y. This test shows the rate of burning of different cokes in the cupola. Specifications made from it require that 1 gram of a sample burn in 4 min. or less. It is the practice of the coke committee of the United States Steel Corporation to keep the character of the ash uniform at

(Concluded on page 1862)

How to Analyze an Export Market

Careful Survey of Trade Peculiarities Must Precede Sales Campaign in a Foreign Country—Export Associations and Commerce Department Help

BY C. M. PETER*

WHEN the manufacturer considers selling his goods abroad, he must decide, first of all, whether he really desires to do exporting on a permanent basis. "Shall I stay in or shall I stay out?" is the vital, preparatory conclusion that he should arrive at. Spasmodic attempts at anything do not bring results. If a manufacturer has an exportable product, as time goes on he will regret possibly that he did not seize the commercial opportunity that lies beyond our own shores.

When a selection has been made of a market considered likely to be suitable for the sale of your product, an analysis of that market is in order. To the large firm with traveling representatives covering the export field this is comparatively simple. A brief preliminary investigation will determine the advisability of sending a man to the market in question to work a survey and establish distributors.

This procedure is, of course, the ideal way to secure an analysis of the market as regards your particular product. As an example: One of our representatives is just returning from an extended trip through the Far East, analyzing markets and establishing distributors. Another representative is encircling South America on a similar mission. We observe nothing complex in this, we simply determined the markets we felt warranted a personal analysis, prepared our men and sent them out. They have amply fulfilled our expectations.

Fundamental Considerations in Analyzing a Foreign Market

In analyzing a new or untried market, consideration and careful scrutiny should be given the following fundamentals, which will determine the course to be followed in exploiting the market and the possible value to the manufacturer to his particular line:

Size.—An idea of the size of the country in question is an essential. A comparison of the area with a State or number of States of the United States of the same approximate area will give a fixed idea of size which will permit a more intelligent opinion of what can be expected from the country in question.

Language and Currency.—The commercial language used must be determined; also whether or not English is permitted or commonly used in business correspondence. A knowledge of the currency used and its stability is essential.

Population and Purchasing Power.—Population, while unquestionably a factor, will be found in many countries to be overshadowed by the question of the purchasing power of the individual. For instance, a motor car manufacturer in considering the possibilities in Mexico, Russia or China, obviously could not use the usual percentage of expectancy of so many cars per hundred of population. By the same token the purchasing power of the individual for your product must be carefully considered.

Principal Cities and Ports.—A study of the map or atlases of the principal cities and ports will aid in determining the most accessible and suitable points of attack on a new market.

Geographical and Climatic Conditions and Seasons.—A survey of the geographical and climatic conditions is very necessary, as in some countries it will be found that all principal ports on the coast are separated from interior cities by mountain ranges, making very difficult the transportation of heavy or bulky products. In a like manner, it is frequently found that sea level

ports and cities have a climate which may provide an excellent market for some articles and be barren ground to others, while the interior or mountainous country will be the reverse. Seasons in foreign markets vary widely from our own and should be studied and considered in order to avoid writing customers complaining of poor business when it is their winter season and our summer.

Industries.—A survey of the principal industries of the country can be readily made, and is, of course, a determining factor as to what business you can expect from that market.

Local Competition.—An investigation should be made as to whether or not a competitive product is manufactured locally and, if so, its quality and price. Consideration should also be given as to quality and price of other American or foreign-made products with which you will have to compete in this market. In considering local or foreign competition, the thought should be kept in mind that American goods are usually high-priced, especially so in foreign markets, but they are also of high quality, and regardless of all things else there is always a market for quality merchandise. This is clearly demonstrated by the quantities of high-priced quality machinery and factory equipment being exported regularly to England, France, Germany and Italy, where in most cases a heavy duty is added, and the competition is with a local product with a much lower list price.

Trade Barriers.—Trade barriers are in effect in some countries and operate adversely to the import of certain American products. This should not be overlooked if your product is one so affected.

Channels of Distribution and Marketing Methods.—Channels of distribution are very important and merit your careful consideration. These practices vary widely in different markets, and it will be found in most instances better to adapt your product to the channels available and the prevailing customs, rather than attempt to require the market to conform to your ideas and practices or to those in vogue in other countries. In many markets you will have for your consideration large well established firms who import only for their own account and will demand exclusive rights to a large territory. You will also find available in most markets large importing firms or manufacturers' agents who will import your products for their own account and distribute them to various wholesale selling organizations.

Shipping Facilities and Interior Transportation.—Investigation should be made to determine the best and quickest method of transportation to the market under consideration. Your interest should not stop when you have determined that you can properly deliver your goods to the port of entry. In many countries inland transportation is by small boat up rivers, navigable only a portion of the year, or by burro pack trains over difficult mountain ranges. Roads and trucking facilities are also becoming more and more a considerable factor. If your product is heavy or bulky, these questions must all be carefully considered.

Marking and Packing Requirements.—The marking and packing requirements of the market should be investigated, as in many countries this regulation is very rigid and may require special preparation of your container or special printing of your wrapper or labels. Violation of these requirements often results in fines or high duties, or in the case of difficult interior transportation a serious delay or the repacking of an entire shipment.

Customs Regulations and Declarations and Duties.—Customs regulations, declarations and duties should be

*Export manager, Black & Decker Mfg. Co., Towson, Md. Abstract of address before National Foreign Trade Council at Houston, Tex.

studied with a view of so preparing your product that it will take the lowest duty. Customs declarations should be made accordingly. A study of this regulation will enable you to determine the approximate landed cost of your product and probable selling price.

Trademarks and Patents.—Consideration should be given the question of trademarks and patents, particularly so if you are investigating a country given to manufacturing. If, in such a country, trademarks and patents are not or cannot be protected, it will be found difficult to interest desirable distributors, as they will fear that when they have built up a distribution of your product it will be copied by a local manufacturer.

Price Control.—Price control is desirable in any market and can usually be maintained if your original arrangements are made to cover it. Some markets are particularly given to price cutting, which destroys profit and eventually loses the interest of your distributor. Care should be taken to determine this condition when entering a new market.

Advertising.—The subject of advertising should be thoroughly investigated in any market, for sooner or later it is bound to come up. The manufacturer should determine the value of his trade paper advertising in the market; also whether or not local dealers or distributors are accustomed to carry local advertisements, at their own or the manufacturer's expense, whether or not catalogs and literature must be furnished in a language other than English, and whether or not there is an excessive duty on printed and advertising matter. Trade paper advertising is not only essential, but it is helpful in many ways.

Sources of Information for Market Analyses

In considering the sources of information to which you can refer in conducting your market analysis, the following stand out in their respective fields and will yield you valuable information suggestions and assistance: Under export trade associations you have the National Foreign Trade Council, with its services and valuable yearly conventions, where your individual problems can be submitted to authorities on export practices. You will find the American chamber of commerce, located in many foreign countries, in a position to be exceedingly helpful. Membership in such asso-

ciations as the International Chamber of Commerce, American Manufacturers Export Association and local export managers' clubs will give you contacts and information that will be found very useful. Export credit associations and international banking houses will give you credit and trade information that is very necessary in the handling of export trade.

Export trade papers of today are establishing themselves in a service not to be derived from any other source and invaluable to the exporter who would grow and keep abreast of the times. The use of the exporters' encyclopedias and various atlases will solve many of the everyday intricacies of exporting.

A proper contact with other manufacturers engaged in export, manufacturers' agents, export agents and brokers and forwarding agents, with their long and varied experience will often give you the answer to a most troublesome problem.

Department of Commerce Great Aid in Developing Export Trade

Last, but by no means least, I would call your attention to the various services and functions of the Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington. From our own experience, I would say it is impossible to estimate the value to us of this important department. The Commerce Year Book and the many bulletins and pamphlets published by the department are available to all, and I am sure our export department could not function efficiently without them.

Available to you through the department are the services of approximately 1000 men in Government service in practically every nook and corner of the globe. Many of these men are experts and authorities on promoting American trade. Compiled in the department at Washington are thousands of volumes of trade statistics, and 99 times out of 100 the department will be able to furnish you the information you desire. Branches of the department in charge of competent men are located in many of our principal cities. You will find them most eager to help you, and if you do not care to use their advice you are overlooking the most valuable information you have available.

Rail Extension to Connect Connellsville, Pa., With Pittsburgh District

WASHINGTON, June 26.—The Interstate Commerce Commission last week issued a certificate authorizing the Pittsburgh & West Virginia Railway Co. to construct an extension of its line, to be known as the Connellsville extension, running from a point near Cochran's Mill, Allegheny County, Pa., in a general southeasterly direction through Allegheny, Washington, Westmoreland and Fayette counties to Connellsville, Pa., a distance of about 38 miles. The proposed extension was urged by a number of iron and steel interests in the Pittsburgh district. Its purpose is to secure a substantial additional volume of traffic destined to or originating within the Pittsburgh district for the Pittsburgh & West Virginia. This road extends from Pittsburgh westward about 60 miles to Pittsburgh Junction, Ohio, where it connects with the main line of the Wheeling & Lake Erie Railway, and it also includes the lines of the West Side Belt Railroad in Pittsburgh. Some of the traffic, particularly that to and from eastern destinations, would be furnished by industries along the Monongahela River from Clairton, Pa., to Pittsburgh. It is also proposed to secure a share of the ore traffic from Lake Erie to the Monongahela Valley by way of the Wheeling & Lake Erie, as well as new traffic at points farther south on the Monongahela.

The proposed line will cross the Monongahela at Charleroi about midway between Monessen and Allenport, Pa., where the plants of the Pittsburgh Steel Co. are located. A plant of the American Steel & Wire Co. is located at Donora, Pa., on the west bank of the Monongahela about five miles from Charleroi. About 60,000 carloads of freight are received or for-

warded at the Monessen plant during the year and about 11,000 at Allenport. The Donora plant, the commission said, is somewhat smaller than that at Monessen. Representatives of the Pittsburgh Steel Co., in supporting the application, announced the intention of the company to extend the lines of the Monessen Southwestern, its plant railroad, to connect the plants at Monessen and Allenport with the proposed line at or near Charleroi. It is proposed, the decision said, to place the Monessen Southwestern in position to perform as a common carrier a part of the through transportation to and from the industries of the Pittsburgh Steel Co. and to participate in the through rates on the traffic. It is also proposed that the line of the Donora Southern, a plant railroad controlled by the Union Steel Co., Donora, Pa., which connects now only with the Pennsylvania, shall be extended across the Monongahela to connect with the Monessen Southwestern, thus effecting connection with the proposed extension and diverting a portion of the traffic of the Donora plant to the new line. The cost of the new line, according to the application, will be \$12,801,619.

The volume of freight traffic handled by the Class I railroads in the first four months of 1928 amounted to 147,296,210,000 net ton miles, according to the Bureau of Railway Economics, Washington. This was a decrease of 8,113,006,000 net ton miles, or 5.2 per cent, compared with the corresponding period last year. Railroads in the Eastern district for the four months period reported a decrease of 10.1 per cent, while the Southern district reported a decrease of 7.7 per cent. The Western district reported an increase of 3.4 per cent.

Refine Chrome Steel at Low Heat

Low Temperature Essential in Basic Open-Hearth Furnace
If Chromium-Bearing Scrap Is Used and If
High Ballistic Tests Must Be Met

BY NICOLAUS N. MENSIIH*

NEARLY all open-hearth metallurgists with whom the writer has discussed the question believe that chromium steel must be made synthetically (that is, without scrap, pig iron or ore containing chromium), if the highest quality is required. In the writer's opinion the deleterious effect of chromium, when present from the beginning of the heat, may be mitigated considerably if certain properties of the element and its slag-forming oxides are known and provided for.

When the author was employed at the basic open-hearth plant of the Nicopol Marioupol Works in South Russia from 1912 to 1916, the production of Krupp armor was begun. Its preferred analysis was:

	Per Cent
Carbon	0.35
Manganese	0.35
Silicon	0.15 or less
Phosphorus	less than 0.04
Sulphur	less than 0.04
Nickel	3.60
Chromium	1.80

It is obvious that when a heat is made from metal containing no alloying elements it is necessary to add enough ferrochrome before tapping to place the required amount in the ingots, plus enough to allow for the inevitable oxidation and slagging (about 20 per cent). But if the original charge contains chromium, this element is never oxidized and slagged completely during the working of the heat. Theoretically it should then be only necessary to add enough ferrochrome to bring the residual chromium up to the percentage required by specification. It would seem that a considerable quantity of ferroalloy might be saved in this way.

Residual Chromium Depends upon Furnace Practice

Additions must be made after laboratory returns on test ingots, if the analysis of the finished steel is to be held to reasonably close limits. The writer's experience convinces him that the amount of chromium remaining in the refined steel from the scrap is independent of the amount originally contained in the scrap, but depends entirely on the method of melting and the temperature of the bath reached during the refining period.

To prove the first part of this statement data from a long list of heats are available, showing the chromium and carbon in the charge and in the bath just before additions. Many other analyses show intermediate values; it can be seen that the relation between residual chromium and original chromium varies from 70 per cent to 19 per cent, independently of the carbon at the end of the refining period.

Typical Analysis of Cool Heats		
Chromium in Charge Per Cent	Chromium Before Additions Per Cent	Carbon Before Additions Per Cent
0.56	0.36	0.11
1.11	0.32	0.11
1.17	0.22	0.09
0.49	0.30	0.09
1.17	0.23	0.07
0.50	0.34	0.07
1.17	0.24	0.06
0.87	0.31	0.06
0.33	0.24	0.20

All the above mentioned heats were made strictly

*Houston Avenue and Ninety-first Street, South Chicago, Ill.

in accordance with instructions from the Krupp Works. They were by no means hot during the refining period. A soft steel bar, 1 in. square, inserted into the bath just before final additions were made, melted in 32 to 35 sec. A typical slag analysis at this same moment was as follows:

SiO ₂	Al ₂ O ₃	FeO	MnO	CaO	MgO	Cr ₂ O ₃
22.8%	8.9%	13.1%	3.9%	36.4%	8.0%	5.0%

Heats made in the above manner produced armor all of which passed the Government's test successfully.

After this practice was firmly established, a new superintendent was placed in charge, and he insisted that all steel (alloy as well as plain carbon) be made in much hotter furnaces and at a faster rate. This change was not made in the armor plant at once, as the special open-hearth furnaces built according to Krupp's design did not permit a much higher temperature without endangering the ports. The new superintendent ordered these furnaces to be remodeled.

When this was done, production of chrome-nickel steel was resumed, and the bath temperature was much higher—the inserted rod melted in 25 to 27 (and even 23) sec. It was among my duties to calculate the alloy additions, and I noted immediately that the amount of chromium remaining in these hot heats was strikingly increased.

Typical Analyses of Hot Heats		
Chromium in Charge Per Cent	Chromium Before Additions Per Cent	Carbon Before Additions Per Cent
0.60	0.41	0.11
0.73	0.57	0.11
1.07	0.60	0.09
0.68	0.61	0.09
0.70	0.58	0.08
0.70	0.67	0.14
1.05	0.60	0.21
0.82	0.63	0.21

Slags on these heats were more basic, lime being up and iron and chromium down. A typical analysis is:

SiO ₂	Al ₂ O ₃	FeO	MnO	CaO	MgO	Cr ₂ O ₃
24.7%	4.8%	9.7%	2.5%	41.9%	9.6%	3.1%

But the most important change was the fact that 32 of the 12-in. plates made from these heats could not pass final tests, and were rejected by the Government's inspectors. It was suspected that the changed steel-making practice was responsible, and consequently two heats were made with high temperatures during the refining period, but considerably lowered for the last 30 min. before making the additions. This change did not lower the amount of residual chromium, nor did it improve the quality of the hardened armor. Analyses of steel and slag at various times during one of these heats (which had 0.88 per cent chromium in the cold charge) were as follows:

Metal	Charge Just Melted	Middle of Refining Period	Just Before Additions
	Per Cent	Per Cent	Per Cent
Chromium	0.39	0.44	0.66
Carbon	0.74	0.57	0.17
Slag			
SiO ₂	24.0	20.1	29.7
FeO	9.6	11.3	8.5
MnO	6.9	5.1	5.2
CaO	35.2	39.9	43.3
Cr ₂ O ₃	7.3	6.5	2.3

Because the writer had opposed changing the furnace construction and the higher temperature melting, he was given authority to make several heats to demonstrate the correctness of his views. During these

trial runs special attention was given to the temperature of the bath at all times, and the ratio between gas and air during the melting period. Data on the first four heats are assembled in Table I.

Heat A was quite hot during all the refining period, but not so high as the superintendent would have liked.

In heat B the temperature was kept relatively low until sample 7 was taken, whereupon the heat was increased.

Heat C started off as B, but the temperature was raised after sample 5, although not so much as in B.

In heat D the bath was relatively cool for the entire heat. Slag analyses during D were as follows:

	SiO ₂	FeO	MnO	CaO
	Per Cent	Per Cent	Per Cent	Per Cent
Sample 1.....	27.7	10.4	6.8	31.6
Sample 3.....	22.9	14.0	6.2	32.2
Sample 8.....	22.4	12.0	6.2	36.4

It is plainly seen that high temperatures in the refining periods are associated with high residual chromium in the metal; further, that a bath with low chromium, melted relatively cold, picked up chromium from the slag as soon as the temperature was raised. Finally that working the entire heat at a low temperature gave a low residual chromium in the metal, unchanged for the most of the refining period, and a finishing slag almost exactly like those produced in the Krupp basic heats previous to the change. The demonstration was so convincing that Krupp's method was restored completely, and the resulting plates passed test successfully.

Soluble Chromium Oxide May Be Responsible

All above mentioned facts indicate that

1. There exists a connection between the amount of residual chromium (left in steel from that contained in scrap) and the temperature reached during the refining period in a basic open-hearth furnace.

2. If this critically high temperature is once reached, any subsequent cooling cannot reduce the amount of chromium in steel.

3. If a high proportion of chromium is left in the steel from that contained in the charge, the quality of steel is affected very seriously.

4. That the amount of chromium in the sample ingot taken before additions are made can serve as a perfect control.

Another interesting detail was noticed by the writer in connection with chromium left in steel from scrap. If the casting of an ingot were interrupted for some seconds, due to some accident with the stopper, a very deep horizontal crack developed, corresponding to this interruption, in steel with high residual chromium, and

Table I—Data from Experimental Heats

Sample	A		B		C		D	
	Cr.	C	Cr.	C	Cr.	C	Cr.	C
Cold charge.....	0.90	...	0.81	...	0.90	...	0.81	...
Just after melting	0.30	0.56	0.31	0.55	0.38	0.72	0.41	0.78
No. 2.....	0.36	0.43	0.23	0.48	0.25	0.58	0.30	0.73
No. 3.....	0.39	0.38	0.21	0.44	0.22	0.39	0.23	0.54
No. 4.....	0.39	0.29	0.20	0.40	0.20	0.34	0.19	0.37
No. 5.....	0.40	0.24	0.20	0.35	0.22	0.27	0.17	0.27
No. 6.....	0.46	0.20	0.20	0.27	0.25	0.24	0.18	0.18
No. 7.....	0.44	0.19	0.21	0.18	0.24	0.19	0.19	0.16
Before additions..	0.43	0.13	0.30	0.14	0.28	0.16	0.21	0.11

the ingot would break completely off at this plane when going through the first pass at the blooming mill. Such an interruption was not so dangerous for steel with a low amount of chromium left from the charge, even though the analysis of the finished steel was the same.

The only explanation of all these facts that the writer can give is that one of the chromium oxides is easily dissolved in the steel at a relatively high temperature. The amount of chromium found by analysis included this chromium. This oxide once dissolved in steel cannot readily be reduced or converted into another oxide which is practically insoluble in steel but soluble in the slag. Once in the steel this harmful oxide stays there.

Another Diesel-Electric Towboat for Use on the Warrior River

The Tennessee Coal, Iron & Railroad Co. has ordered a second Diesel-electric towboat for use on the Warrior River. The first, ordered last March, will be placed in service some time this summer, and the second is expected to be completed by early fall. Both boats are of the tunnel-stern, twin-screw type. They are being built by the American Bridge Co., and will be outfitted by the Carnegie Steel Co., while the electric equipment will be furnished by the General Electric Co.

The Tennessee company went to the Diesel-electric drive for the new boats to obtain higher efficiency and the better maneuvering qualities necessary on the Warrior River, which is a tortuous one, and has so many sharp bends that the length of tows is limited to seven barges.

With the exception of the galley and the heating facilities, the towboats will be completely electrically equipped. The power plant in each boat consists of two 550-hp. Diesel engines, made by the New London Ship & Engine Co., which are direct-connected to two 335-kw. 250-volt 250 r.p.m., d.c. generators. Each propeller will be driven by a double motor rated 400 hp. at 140 r.p.m., 250 volts, shunt wound.

Power for auxiliaries and lighting, as well as for excitation for the main generators and propelling motors, will be furnished by two 40-kw. 120-volt compound-wound d.c. auxiliary generators. These will be driven by the main engines and will be mounted directly on the shaft extensions of the main generators. Variable voltage control will be used, arranged for operation either from the pilot house or the engine room.

Screw Thread Commission and Gage Committee Visit Rochester

The National Screw Thread Commission and the American Gage Design Committee met in Rochester, N. Y., on June 21 and 22 and visits were made at the plants of the Taylor Instrument Companies, the Bausch & Lomb Optical Co. and the Eastman Kodak Co. The group was headed by Dr. George K. Burgess, director of the Bureau of Standards, Washington.

At a dinner held on June 21, James Ely, vice-president of the Taylor companies, presided and Dean Dexter Kimball of the college of engineering of Cornell University was the principal speaker.

Meeting of the Institute of Metals in Liverpool

The Liverpool, England, meeting of the Institute of Metals, to be held Sept. 4 to 7, is proving attractive. Already over 200 members—including many from overseas—have indicated their intention of taking part in the meeting. The papers to be presented include a series dealing with the die-casting of alloys, as well as the eighth report of the corrosion research committee. A "full-dress" discussion of corrosion problems will be a feature. It is particularly appropriate that this discussion should take place in a maritime center such as Liverpool. On the social side the gathering promises to be a pleasant one; a series of receptions, visits to places of interest and other functions are being arranged by the local reception committee.

Youngstown Seeks River Outlet

Briefs Filed in Application for Construction of Line to Connect Valley District With Ohio River—Trunk Lines Oppose "Duplication of Existing Facilities"

WASHINGTON, June 26.—Briefs were filed yesterday with the Interstate Commerce Commission in connection with the application of the Pittsburgh, Lisbon & Western Railroad to construct an extension which would connect the Youngstown district with the Ohio River and the application of the Montour Railroad to acquire control of the P. L. & W. by purchase of the latter's capital stock. Both lines are controlled by the Pittsburgh Coal Co.

In arguing for the proposed extension the brief of the applicant contended that the new line will be in the public interest and will serve the public convenience and necessity, "especially as it will extend the benefits of the Government's waterway system to important inland territory now unable to utilize that system and suffering severely by reason of that fact." The trunk line carriers, including the Pennsylvania, Pittsburgh & Lake Erie and the Baltimore & Ohio railroads, on the other hand, argued that the line would be a duplication of existing service and is not necessary. The Pittsburgh Coal Co., in its brief, contended that the Pittsburgh district is in need of a new outlet for its coal production and a more competitive basis of rates wherever possible. The inland waterway on the Ohio River system, it was declared, would furnish that outlet.

If construction by the P. L. & W. is authorized, it will consist ultimately of its present east-and-west line between New Galilee, Pa., and Lisbon, Ohio, and a new north-and-south line between the Ohio River on the south and Youngstown and Struthers, Ohio, on the north, by way of Negley and Mill Rock, Ohio, as junctions between the old and new lines. The southern terminus of the new line would be at Smith's Ferry, Pa., on the Ohio River. The bulk of tonnage would consist of coal from western Pennsylvania to the Youngstown district and iron and steel from that district to the Southern and Southwestern markets.

Youngstown Handicapped in Competing with Pittsburgh and Cleveland

The brief of the applicant pointed out that the Youngstown district, as a producer of iron and steel, is in keen competition with manufacturers in the Pittsburgh and Cleveland districts. Pittsburgh, it was declared, enjoys the advantage of river location, while the Cleveland group enjoys the advantage of Lake location. Both, it is pointed out, are in a position to utilize cheap transportation on the Government's inland waterways to a considerable extent, Pittsburgh on its fuel inbound and on a portion of its products outbound and Cleveland on its ore inbound and a portion of its products outbound. Youngstown, however, the brief said, is dependent on rail transportation for all inbound raw materials and all outbound manufactured goods. On inbound raw materials alone, it was stated, Youngstown today is paying \$2.07 more per ton of pig iron production and \$2.82 to \$3.22 more per ton of finished steel production than in 1913. These increases were declared to be much greater than those borne by its Pittsburgh district competitors. A more recent development of river transportation, again to the great detriment of Youngstown, it was maintained, is in the movement of iron and steel articles from the Pittsburgh district down the Ohio and Mississippi rivers, and into the South and Southwest by reshipment. Pittsburgh is thus again enabled to utilize cheap water transportation on products moving, for instance, to the oil fields of the Southwest—products of which Youngstown was for years a prominent source of supply, said the brief. It was declared that Youngstown's inability to utilize the river for this tonnage is a particularly severe handicap just now, due to the fact that rail

rates on such Mississippi Valley business were recently considerably increased.

Contend Landlocked Position Has Checked Youngstown's Growth

"It is to conditions such as those just recited that Youngstown attributes its decline as an iron and steel producer—from second to third place in the United States—in recent years," it was urged. "In such a situation the opportunity to utilize the river is vital to Youngstown. It has for years been endeavoring to obtain adjustments of freight rates on inbound raw materials, including the establishment of ex-river rates, that would tend to restore the previous parity with Pittsburgh. It has failed entirely along these lines. It has long sponsored the Lake Erie and Ohio River canal project, but sees no hope of relief in that way for many years to come. But it sees in applicant's proposal herein a measure that promises prompt and substantial relief in the way of lower transportation costs, and accordingly indorses these proposals."

The trunk line carriers have taken the position that they are fully able to transport either all-rail or, if necessary, river-and-rail over river transfer terminals to be located on the Pennsylvania near Beaver, Pa., and on the Pittsburgh & Lake Erie near Monaca, Pa., all coal traffic which the proposed P. L. & W. line expects to handle. The Baltimore & Ohio is not so located as to be enabled to participate in any such river-and-rail routes to Youngstown. The applicant contended that there is no assurance that any such river-and-rail routes would be established by the existing trunk lines and that there would be no greater convenience to the public in such routes than in the river-and-rail route proposed by the P. L. & W. It is pointed out that efforts to get such service for Youngstown have proved futile. The new line, the brief of the applicant said, would divert comparatively little tonnage from existing lines. The argument also was made that Congress by statute has encouraged development of waterways.

Railroads Condemn Move as Indirect Attack on Rate Structure

The railroads argued that public interest would not be served by construction of the extension and that it would only be a duplication of existing and adequate transportation facilities and would result in diversion of business by means of excessively low rates "or other artificial devices for the purpose, with the effect of developing one carrier or mode of carriage at the expense and to the detriment of existing carriers or modes of carriages," as stated in the Baltimore & Ohio brief. It was asserted that the Pittsburgh Coal Co. acted not because of a lack of railroad facilities, but because it wants lower rates in the hope that such rates would provide an outlet for its coal. The hope for lower rates is declared to be predicated upon assembling costs which the commission has condemned as a basis for rate making. Knowing that under these circumstances, it was pointed out, the railroads have been unwilling to reduce their rates and that the commission would not order a reduction, the applicant is seeking "by indirection to do what it may not lawfully obtain directly." Even if the existing railroads put in extensions from the Ohio River, it was declared, the new line would be favored by the steel industry in the Youngstown district. In an effort to support this statement the brief referred to testimony of different steel manufacturers. Establishing the new line, it was contended, would disturb the existing rate structure and would increase the burdens of the trunk lines in the execution of any consolidation plan.

NEW LINE OF POWER PRESSES

Open-Back Inclinable, Horn and Apron and Other Types Having Improved Features Made Available by the American Can Co.

OPEN-BACK inclinable, horn and apron, arch, screw and toggle presses, in a range of sizes in each type, have been placed on the market under the trade name of Canco by the Equipment Division of the American Can Co., 120 Broadway, New York. Strength, accuracy and speed, without sacrifice of safety, are general features of the machines, the general arrangement of which may be noted from the accompanying illustrations.

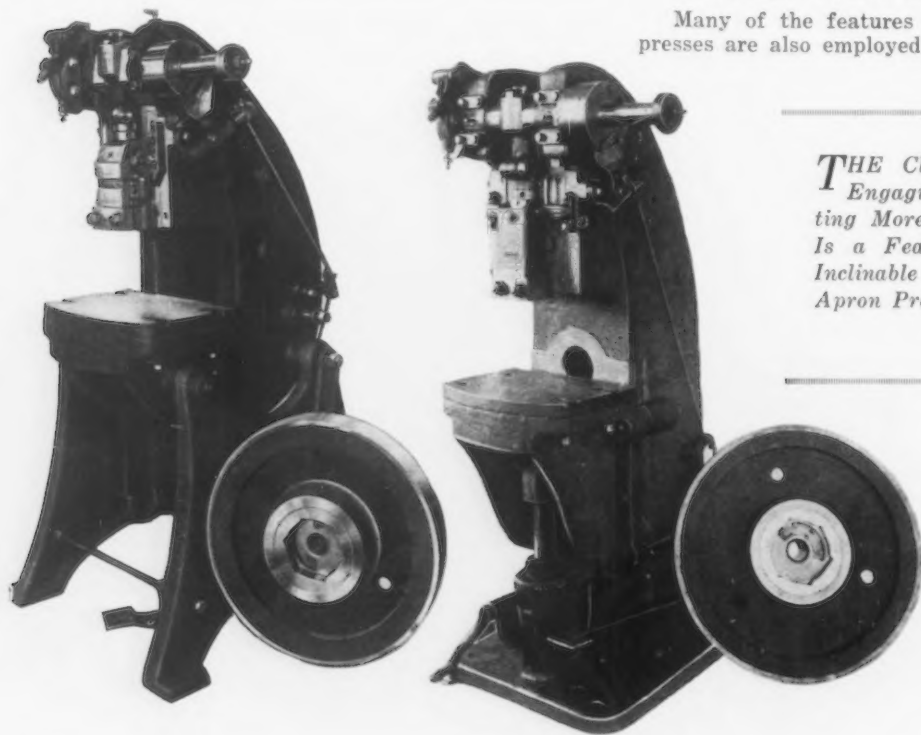
The open-back inclinable presses are available in plain and geared types and in standard and deep-throat styles. The frame of the machine is a semi-steel casting reinforced at vital points, and the crankshaft is of chrome-nickel steel, heat treated. All bearings are scraped in. An outstanding feature is the clutch,

Seven sizes of the standard throat flywheel press ranging in weight from 860 to 8413 lb. and six of the standard throat geared press, ranging in weight from 1170 to 9113 lb., complete, are available. The deep-throat plain unit is made in three sizes, from 1855 to 4650 lb. in weight, and the geared press in one size only, weighing 4950 lb. The standard length of stroke for all sizes of both types is 3 in. The maximum length of stroke ranges from 4 to 6 in. for the plain press.

Other specifications for the smallest and largest open-back inclinable press, respectively, with standard throat are as follows: Depth of throat, center of slide to frame, 4 to 11 in.; die space from top of bolster to slide (stroke down, adjustment down) $5\frac{1}{4}$ to $7\frac{1}{2}$; size of bolster plate, 8 x 13 in. to 23 x 52 in.; and width of opening through the back, 6 to 18 in. Floor space requirements range from $25\frac{1}{2}$ to 23 to 51 x 44 in. and the height from floor to top of flywheel, $66\frac{1}{4}$ to 100 $\frac{1}{2}$ in. The flywheel ranges from 22 to 48 in. in diameter, weighs from 200 to 1575 lb. and operates at speeds up to 135 and 80 r.p.m.

Horn and Apron Press Uses Same Clutch

Many of the features of the open-back inclinable presses are also employed in the new horn and apron



THE Clutch, Having Six Engaging Points, Permitting More Rapid Operation, Is a Feature of Both the Inclinable and Horn and Apron Presses Shown at the Left

which in having six engaging points, permits more rapid operation of the machine, thereby providing increased output. A hardened steel block, actuated by a foot treadle, is arranged to engage one of the six driving surfaces of the clutch. Upon completion of the stroke a positive knock-out functions, but a lock is provided so that continuous operation may be secured when desired. The same mechanism includes a pawl by means of which the press may be turned backward if desired, such as in setting dies. The arrangement is such that when the press is started forward, the pawl, if engaged, is thrown out of engagement automatically. Either of two types of brakes, cam-actuated for presses operated intermittently or treadle release for machines operating continuously, can be provided.

Positive knockout, finished surfaces for the application of attachments such as feeds, gages, etc., and the provision of three steps for inclining the frame, as well as inclining attachment, are among other features of the inclinable machines. Gibs and slides are long to assure accurate alinement, and increased die space is provided. Lubrication is by means of the Dot system. An improved punch holder of hardened steel, designed to give better purchase on the punch stem and eliminate marring and scoring, and the use of a webbed flywheel, are other details intended to contribute to the ruggedness, high production and safety of these presses. Tie rods, back gearing and motor drive arrangement are available if required.

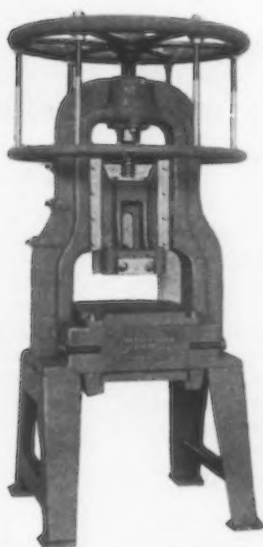
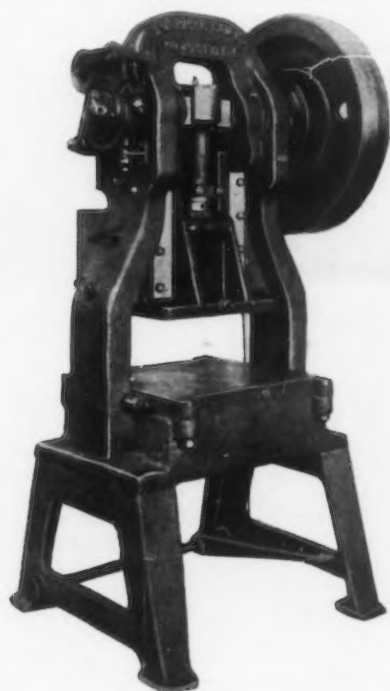
presses and the arch presses offered by the company.

The frame of the horn and apron press is a semi-steel casting, reinforced, and the crankshaft is of chrome-nickel steel, heat treated. The same type of clutch, with six engaging points, is provided and the cam-actuated brake is also offered. The horn hole is large to permit use of horns with sturdy shanks. The punch holder is of hardened steel and is of the same design used on the inclinable machines. The apron is a semi-steel casting, clamped to the column of the press, and is provided with an efficient elevating device. The means of clamping the apron is said to provide a rigid but readily adjustable member. The apron can also be fitted with an anti-friction sliding bolster or table.

Six sizes of the plain style and two of the geared style are available. Specifications of the smallest and largest plain machine are, in part, as follows: Weight, 980 and 3715 lb.; standard length of stroke, $1\frac{1}{2}$ in.; maximum length of stroke, $3\frac{1}{2}$ and $6\frac{1}{2}$ in.; and depth of throat (from center of slide to frame), 4 and 10 in. Horn holes range from $2\frac{1}{2}$ to $5\frac{1}{2}$ in. in diameter. Sizes of bolster at the widest points range from 8 x 13 in. to 18 x $23\frac{1}{2}$ in. Floor space required for the smallest machine is 24 x $20\frac{1}{2}$ in. and for the largest, 40 x 28 in.

The arch presses are intended for large blanking and forming operations. Increased die space is provided and this can be further increased by means of a

removable front to the bed, making it adaptable for well type dies, etc. Two sizes of the machine are offered, one of which weighs 4300 lb. and the other 6000 lb. The slide adjustment of both machines is 3 in. Other specifications are: Distance between uprights, 28 and 30 in.; die space from top of bolster plate to face of the slide (stroke down, adjustment up) is 6 and 6½ in.; size of bolster plate with removable front, 26 x 27 in. and 28 x 29 in.; and size of bolster plates with solid fronts, 23 x 27 in. and 26 x 29 in. Both the plain and geared presses are available in either straight-leg or inclined-leg types and motor driven. The overall floor space occupied by the presses with straight legs is 40 x 45 in. and 42 x 51½ in. The geared machines, which weigh 4900 and 6700 lb., re-



spectively, occupy floor space of 43 x 59½ and 48 x 70 in.

The screw press, which is adapted for testing dies, is fitted with an auxiliary handwheel as illustrated, which is intended to provide extra weight and also to eliminate the hazard from overhanging bars. Three sizes are available. The maximum stroke of the slide is 7½ and 8 in.; die space 11 and 11½ in. and bolster plate size, 19 x 20 in. to 24 x 27½ in. The distance between uprights is 20 and 28½ in.

Toggle Presses of Compact Design

Compact and sturdy construction is a feature of the company's toggle press, seven sizes of which, capable of exerting pressures from 150 to 1200 tons, have been made available. The main frame of this machine is a solid annealed casting of large section designed to provide rigidity and eliminate spring. The slide of the press is designed with the toggle lever at the bottom and the gearing close to the floor, which construction is emphasized as eliminating top heavy appearance, overcoming vibration and eliminating the necessity of placing the press on a foundation. Having the toggle lever at the bottom, the weight of the slide and the springs in the front of the press are said to take up lost motion so that there is no jar when the die strikes the work. The toggle lever is a steel casting and the toggle seats and pins are of tool steel, hardened and ground, to withstand the heavy pressures exerted by these machines.

Adjustment of the upper platen is obtained conveniently through the medium of a steel wedge regulated by a handwheel on the left-hand side of the press. Dial adjustment for the wedge permits keeping an accurate record of the setting of the dies, assuring uniformity of the work and saving considerable time in die setting. A shear pin, accessibly located to facilitate replacement, can be furnished. The machine can be arranged either for belt or motor drive.

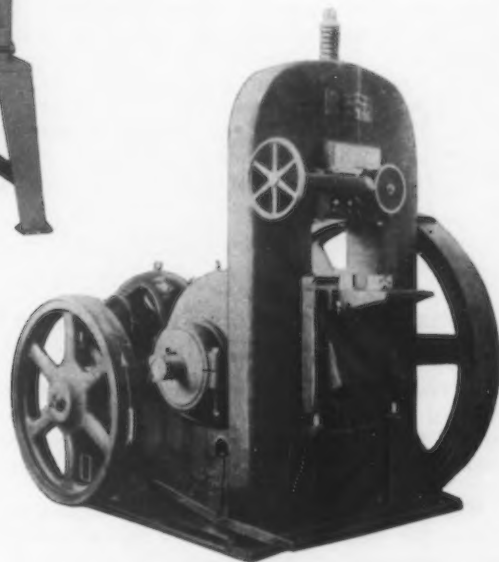
The smallest of the seven sizes of the machine is of plain style and the others are of geared type. The smallest press weighs 4460 lb. and the largest 34,000 lb. The stroke of the slide on all machines is 1½ in. Distance between uprights ranges from 11¼ to 20¼ in. and maximum die space ranges from 12½ to 14 in. Floor space occupied by the smallest press is 45 x 47 in. and by the largest, 100 x 105 in. Strokes per minute range from 85 to 35.

Foundry Equipment Orders Much Higher

Orders for foundry equipment as reported by 11 manufacturers of the Foundry Equipment Manufacturers' Association showed a great increase in May. The total was 335.6 per cent of the average monthly shipments in 1922 to 1924. This is much the highest figure for many years. It compares with 107.7 for April and

THE Arch Presses, for Large Blanking and Forming Operations, and the Screw Press, Which Is Adapted for Testing Dies, Also Have Improved Features

The Toggle Press, Below, Is of Compact and Powerful Construction



with 134.8 for May, 1927. The largest previous month of the past three years was February, 1927, when the figure was 198, or not much more than half that of last month.

Shipments in May were 104.7, while unfilled orders at the end of the month, due to the great volume of orders received, were 344.5.

Expansion of Oliver Machinery Co.

Business and plant of Butterworth & Lowe, Grand Rapids, Mich., have been purchased, under date of June 15, by the Oliver Machinery Co. of Grand Rapids, manufacturer of woodworking machinery and machine tools. The Butterworth establishment has for years made band saws for cutting logs and saws for use by package manufacturers, veneer mills, etc. The company is manufacturing also a line of machinery for the stone industries, including rock crushers, nippers and crackers. The firm has made a specialty of equipment for gypsum mines, with complete equipment, including elevators, shafting, crushers and kettles. The Oliver company expects to continue all of these lines in addition to its own. No new manufacturing facilities or equipment are contemplated.

New Norton Cylindrical Grinder for Pieces Up to 14-In. in Diameter

A new model cylindrical grinding machine, designed to swing work 14 in. in diameter and intended primarily to secure high production on car axles, crankshaft bearings and similar pieces, has been brought out by the Norton Co., Worcester, Mass.

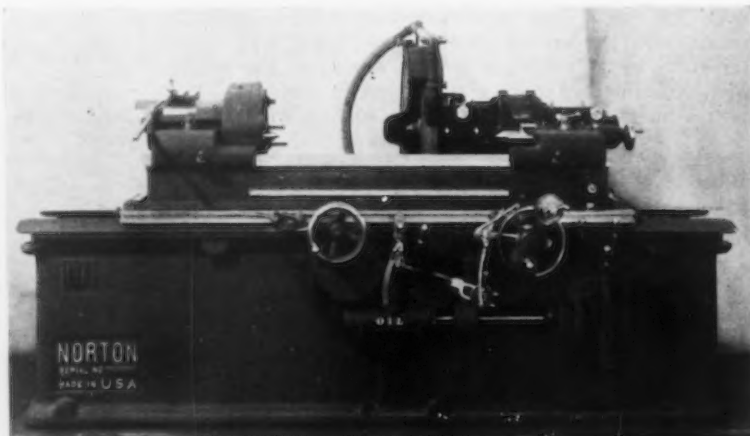
The machine is said to have been developed to meet the demand created by experience with the company's type BA 10-in. machine, which has been on the market for a number of years. Ample space has been provided, up to the capacity of the machine, for work with flanges or other projections and when steadyrests are necessary pieces up to 6½ in. can be ground. Two standard sizes of the machine, 14 x 36 in. and 14 x 120 in., with all overhead or motor drive and with either hand or power table traverse, are available. Features common to both the new and the 10-in. machine include improved wheel spindle, ball-bearing wheel feed screw, chain-driven headstock, selective gear speed-change mechanism, and anti-friction countershaft bearings on overhead drive arrangements.

Simplicity of construction characterizes the wheel spindle, which is of heat-treated alloy steel and has large diameters and long bearings. It is adaptable to wide-wheel, straight-in cut as well as traverse grinding. Bearing adjustment may be made while the machine is in operation, the lower bearing being fixed while the upper and outer are adjustable by accessible thumbscrews. Flood lubrication, visible through glasses on the front of the wheel-slide is provided for the spindle.

The wheel-slide is massive and has long and wide ways. The wheel is driven through a downward pull of the belt, which, combined with the weight of the slide itself, prevents lifting under the pressure of a

heavy cut. Delicate feed adjustments by means of a micrometric arrangement advance the wheel to the work in increments of one-eighth of a thousandth of an inch. The wheel feed has a large diameter screw, mounted on ball bearings and engaging a long half nut on the wheel-slide.

Convenient speed-changing device on machines with power-table traverse is featured as encouraging the use of proper speeds. Speeds are changed at the front of



Crankshaft Bearings, Car Axles and Similar Work May Be Ground on a Production Basis. The swing is 14 in.

the machine through a selective gear speed mechanism, without stopping the table, work or wheel. An independent truing device permits truing of the wheel without disturbing the lever for regular table speed changes.

The work table is characteristic of the type A Norton machine and any of the attachments or mechanisms for the 14-in. type A may be used on the new model. Screw or lever types of footstock are ordinarily provided, but for special work air or crank-operated styles are available.

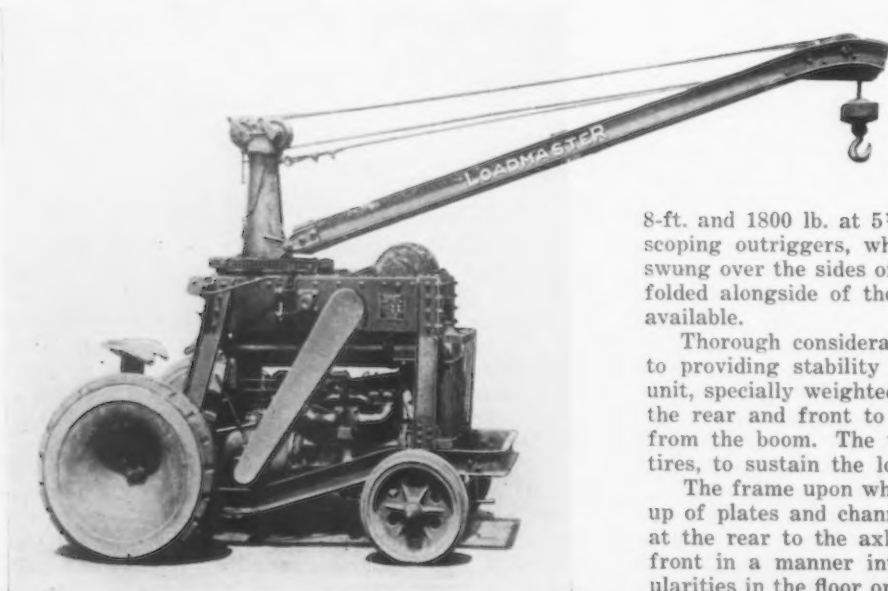
Gasoline-Powered Swing Crane for General Utility Work

A tractor-mounted swing crane which moves from place to place and lifts and swings its load by power derived from the tractor engine is being placed on the market by Frederick H. Poor, Inc., 50 Church Street, New York.

The machine, designated as the Loadmaster, is intended for general utility work in industrial plants, warehouses and storage yards. In addition to lifting, transporting and placing of material, the machine may

be used to haul loads or trailers attached to the tractor upon which the crane is mounted.

With the tractor stationary the crane can handle loads over a swing of 240 deg., or 120 deg. either side of the forward position, at a radius of 10 ft. from the mast center. With the boom directly forward loads up to 2400 lb. can be handled at a 10-ft. outreach, and loads up to 3000 lb. at an 8-ft. and 5½-ft. outreach. The height of the load hook from the floor at these outreaches is 6 ft. 3 in., 10 ft. and 12 ft. respectively. With the boom swung at the side of the tractor, the lifting capacity is 1000 lb. at 10-ft. outreach, 1250 lb. at



Traction, Boom Swing, Boom Lift and Other Operations Are by Power from the Tractor Engine

8-ft. and 1800 lb. at 5½-ft. outreach. Adjustable telescoping outriggers, which permit heavier loads to be swung over the sides of the machine and which may be folded alongside of the machine when not in use, are available.

Thorough consideration is said to have been given to providing stability and sturdiness in this movable unit, specially weighted wheels being employed both at the rear and front to counterbalance loads suspended from the boom. The wheels are equipped with broad tires, to sustain the loads without undue tire loading.

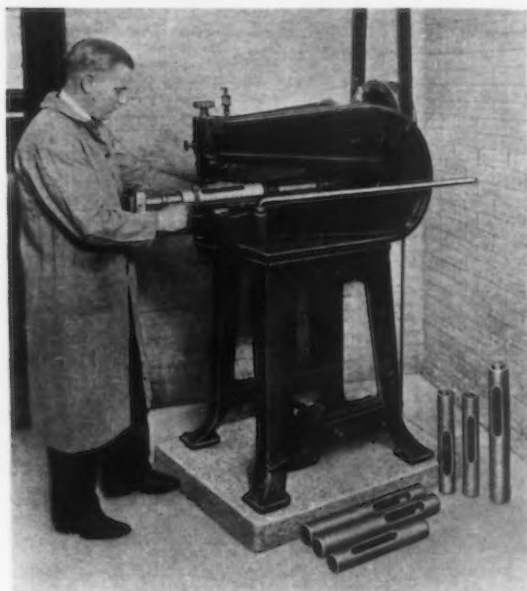
The frame upon which the mast is mounted is made up of plates and channels, the structure being secured at the rear to the axle housing and suspended at the front in a manner intended to compensate for irregularities in the floor or roadbed over which the machine

travels. The hoisting drum is connected to a self-locking worm gear and is power-operated through a clutch and bevel gears, operation of the drum being controlled by means of a lever within easy reach of the operator. When the drum is not in motion, the load is held in suspension on the boom by the worm gear, without the use of a friction brake. The swinging boom is made up of two steel channels and the bull wheel, by which the boom is swung about the mast, is power-driven through chain and sprocket. The bull wheel is equipped with an expanding brake of such design that the boom may be controlled in its swing, or when not under power may be set in any fixed position.

For conditions requiring higher lifts or long boom outreaches, special equipment can be furnished.

Nibbling Machine for Slotting Tubes

For the slotting of tubes used in the manufacture of oil burners and other products, Andrew C. Campbell, Inc., Bridgeport, Conn., is offering the adaptation of its model No. 1-B nibbling machine here illustrated. It is claimed that in cutting the holes in the sides of the tubes shown in the illustration the operating time was



Means Are Provided for Convenient Mounting and Removal of the Tubes

reduced from 16 min., necessary in the method previously employed, to 40 sec.

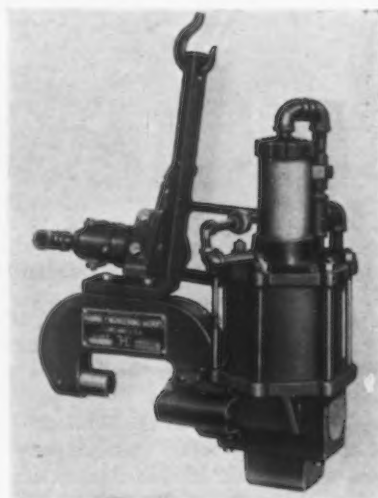
A mandrel, which fits closely the inside diameter of the steel tubing to be cut, is part of the equipment of the machine. The template used is made up of two half tubes hinged with a quick-acting clamp on the other side, which permits it to be attached quickly to the tube to be cut. The outboard bracket has a quick-acting swing clamp on the other side to hold the outboard support for the mandrel, enabling the tubes to be mounted and removed conveniently. The edge left by the slotting operation is said to be practically smooth and no finishing is necessary.

New Resistor and Fuse

A type-H combination potential transformer fuse and wire-wound resistor for 2500 to 25,000-volt service, intended for indoor application, and mountable on any flat surface or upon 1¼-in. pipe, is being made by the Westinghouse Electric & Mfg. Co. The resistors are placed in series with the fuses to limit the current effectively in case of short circuit. This permits the use of potential transformer fuses on any circuit, regardless of its short-circuit amperes, provided the voltage rating of the system is not more than that of the fuses and resistors. The latter are made up of coiled nichrome wire wound in the grooves of a heavy wet-process porcelain tube.

Portable Pneumatic Press for Automotive and Other Operations

A portable pneumatic press which exerts pressure of 8 tons and weighs only 95 lb. has been made available by the Hanna Engineering Works, 1765 Elston Avenue, Chicago. Work for which the machine is adapted includes the pressing of shackle pins into automobile chassis frames as the frames pass along the chassis assembly conveyor line. The tonnage exerted and the short stroke make the machine suitable for shackle pins



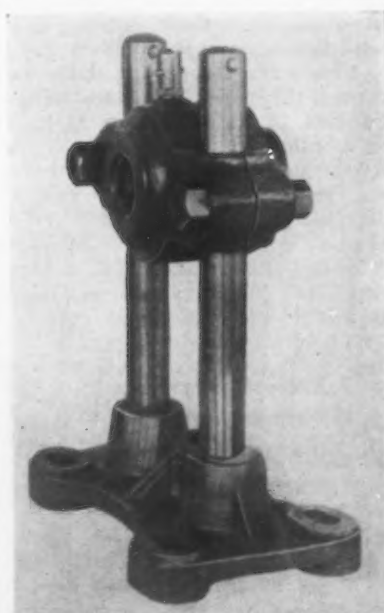
The Weight of the Machine Is Only 95 Lb., and the Pressure Exerted Is 8 Tons

that are serrated under the head and that have a threaded hole in the head which must not be marred.

The press illustrated has a depth of throat, or reach, of 2 in., a gap of 6 in. and die stroke of ⅝ in., but several other sizes are available. The mechanism between the air piston and the die is of roller and wedge type, which provides a variable leverage or tonnage in conformity with the requirements of the work to be done. High frictional efficiency of the mechanism and low air consumption are claims for the machine.

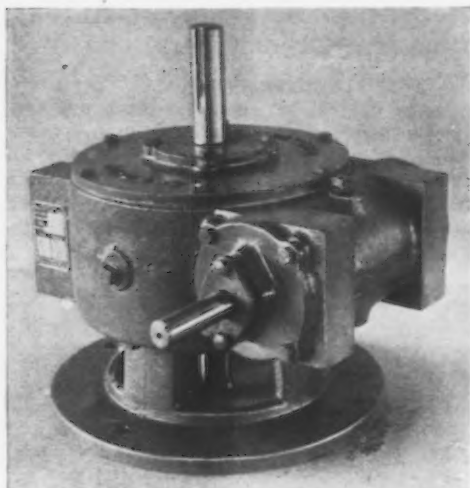
Self-Alining Hangers for Use With Speed Reduction Units

A line of self-alining hangers suitable for use as outboard bearings in connection with the operation of speed reducers and chain drives has been made available by the Boston Gear Works Sales Co., Norfolk Downs,

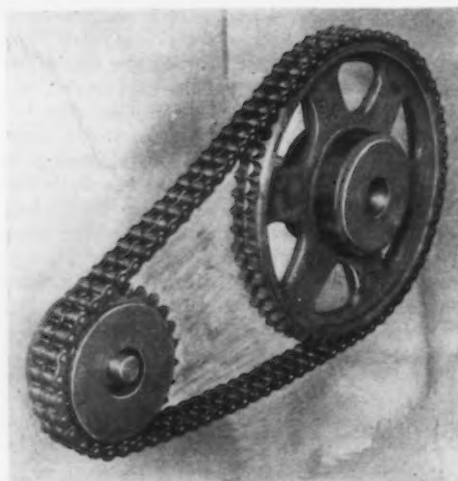


The Hanger Is Adjustable for Height and Remains Rigid After the Adjustment Is Made

Mass. The device illustrated herewith is arranged for height adjustment and is constructed to remain rigid after adjustments have been made. It can be fastened conveniently to the shaft at any point and is designed to prevent binding and heating of the shaft. The shaft bore is in fractional dimensions. The hanger is designated as the type BF.



Tapered Roller Bearings Are Employed in the Vertical Speed Reducer, Which Is Built in a Range of Sizes. The standardized chain drive, at the right, is available for from 1 to 100-hp. drives



Offers New Gear Reduction Unit and Standardized Chain Drives

The Boston Gear Works Sales Co., Norfolk Downs, Mass., has placed on the market a new vertical speed reducer, designated as the type V, for use on mixers, agitators and other equipment requiring a vertical shaft reducing unit. The company is also adding to its line a series of Renold-Boston standardized silent and roller chain drives for industrial purposes.

Compact design and the use of tapered roller bearings throughout are features of the vertical speed reducers. The units may be fastened conveniently to the

top of a machine, to a wall or to the floor, and are designed so that the driven shaft can project above or below, or both. Oil-tight construction, eliminating oil leakage, is followed. The worm gears are of phosphor bronze and the worms of hardened steel, with the threads ground and polished. The units are available in ratios from 9 $\frac{3}{4}$ to 1 to 50 to 1.

The standardized chain drives, shown in the separate illustration, are available from stock for from 1 to 100-hp. drives. This standardization of driving chains is emphasized by the company as of importance in that by consulting the company's handbook on the Renold-Boston chain drives, the correct size of chain for the particular job may be selected readily.

Mine Stripping with Largest Electric Shovel Ever Built

Stripping operations on a mine in northern Illinois are being carried out with the aid of a type 5480 electric shovel. Made by the Marion Steam Shovel Co., Marion, Ohio, this is said to be the largest shovel ever built. The shovel carries a 12-cu. yd. dipper on a 90-ft. boom and a 60-ft. dipper handle. It is mounted on crawling traction trucks and is operated electrically from power lines of the public utility company. A 750-hp. motor drives the motor-generator set for furnishing power to the various motions, and the working weight with ballast is approximately 850 tons.

Operating three 8-hr. shifts each day, Sundays excepted, the shovel has, since being placed in operation, handled 15,481 cu. yd. in 24 hr. It is expected that in a calendar year it will handle from 2,000,000 to 3,000,000 cu. yd. of material.

Prior to the erection of the type 5480, the largest coal stripping unit had been the Marion Type 350, which carried an 8-cu. yd. dipper, a 90-ft. boom and a 58-ft. dipper handle. This machine operated effectively and economically in overburden up to 40 ft. in thickness, where the vein of coal averaged 5 ft. in depth.

More Coke Produced in May

By-product coke made in May is reported by the United States Bureau of Mines at 4,083,759 net tons, compared with 3,925,195 tons in April and with 3,788,164 tons in May, 1927. Adding 376,000 tons of beehive coke, the total May production of coke becomes 4,459,759 tons, or 1.358 net tons for each gross ton of pig iron produced. This last figure compares with 1.350 tons in April, and with 1.303 tons in May, 1927.

Exceptionally Large Stripping Shovel Operated by Electricity and Moving on Crawler Trucks. The shovel has a 12-cu. yd. dipper and great hourly capacity



Tape Hook Enables One Man to Measure Accurately

A hook for steel tapes recently brought out by the Lufkin Rule Co., Saginaw, Mich., enables one man unassisted to take long and short measurements accurately. It is easily slipped on and off the tape and yet cannot fall off. The hook has a toothed edge and takes a firm and square grip on the metal or other material as soon as tension is applied to the line, releasing itself when tension is released. It swings with the ring of



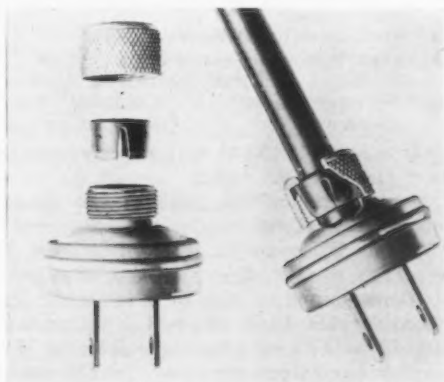
Hook to Permit One Man to Use a Steel Tape

the tape, thus guarding against breakage of the line and allowing the hook to fold against the case when the line is wound in. The hook is made of composition metal of light weight and is 2 in. long. It is suitable for standard steel tapes $\frac{3}{8}$ in. wide.

New Cord-Grip Plug Cap

An attachment plug cap with an improved type of cord grip, brought out by the Cutler-Hammer Mfg. Co., Milwaukee, is reported to be unbreakable. The cord grip acts as a positive strain relief and is designed particularly to lessen short-circuit hazards. Fastening the cord grip is a simple matter and can be done without the use of tools. It is only necessary to screw down on the knurled collar.

The knurled collar wedges a fiber bushing tightly against the cord. The parts are so designed that a natural pressure from the inside prevents loosening of the



Unbreakable Is the Claim Made for This Simple Plug Cap

knurled collar and insures that a firm grip is maintained at all times. The fiber grip bushing serves to insulate the cord from metal parts and results in less damage to the cord, because it prevents contact between cord and metal. This bushing also acts as the clamp and is the only part that actually touches the cord.

A rustproof armored shell, made of heavy brass, prevents breakage when dropped on cement floors, etc. Sheet bakelite is used to hold the blades firmly in place. The cord grip cap can be obtained in either bakelite brown or zinc gray finish.

New Recorder Controller

A new recorder and contacting controller, now being offered by the Bristol Co., Waterbury, Conn., combines in one case the features of a rugged recorder and a thermometer controller, which makes a compact outfit. The equipment is a single-pen recording system with controller system and scale mounted directly above it.

Recording pen and moving contact of the controller are actuated by separate pressure elements, which are exactly alike in construction. These elements are connected through one capillary tube to the sensitive bulb. Arranged in this way the record is not impaired by re-

tarding effect of the controller. And the recorder draws a true record both above and below the control point.

This recorder controller is arranged for a contact capacity of 1000 watts by equipping it with self-contained automatic switches. Terminals are supplied for making easy connections to line and control apparatus through conduit. All internal circuits are heavily insulated.

To use, it is only necessary to set the control to the desired temperature by moving an index pointer over a scale to the exact degree to be controlled. This index pointer is so long that it is possible to adjust it accurately and easily. Zero adjusters are provided for both recorder and controller pressure elements.

Boiler Plate Embrittled by Alkaline Feed Water

Prof. Samuel W. Parr and F. G. Straub of the University of Illinois have continued their studies on embrittlement of boiler plate. These extended investigations have been reported several times, as at the 1926 meeting of the American Society for Testing Materials (see *THE IRON AGE*, July 1, 1926, page 4). Bulletin No. 177 of the Engineering Experiment Station at Urbana, Ill., brings the researches up to date, and includes data on a number of cracked boilers recently examined. These particular failures occur in the rivet seams below water line, start from the outside of the plate, and are evidently intercrystalline corrosion cracks. The authors say the only common factor existing in these failures is an undue accumulation of sodium hydrate in the boiler, either due to hydrolysis of sodium carbonate or to water softening dosage or devices. The remedy is to keep the ratio between sulphates and carbonates in the feed water within specified limits.

Fabricated Steel Plate Orders Drop 16 Per Cent from April

WASHINGTON, June 22.—Orders for fabricated steel plates in May totaled 42,376 net tons, or 53 per cent of the capacity of the 51 firms reporting to the Department of Commerce, comparing with 50,347 tons, or 63 per cent of capacity, in April. May orders made the smallest total since January. Orders in May were distributed as follows: Oil storage tanks, 14,849 tons; refinery materials and equipment, 2012 tons; tank cars, 1909 tons; gas holders, 4636 tons; blast furnaces, 202 tons; stacks and miscellaneous, 18,768 tons.

Orders for the first five months of the current year aggregated 225,170 tons, against 236,134 tons for the corresponding period of last year. May, however, made a better record than last year, when the total was 37,883 tons.

Employment High in Ohio

Employment in the iron and steel industry of Ohio was the same during May as in April, but showed a 3 per cent gain over May, 1927. In Cleveland the number of workers was 4 per cent greater than in April and 26 per cent ahead of May, 1927. The index for May stood at 102, with an average month in 1923 taken as 100. In the machinery group employment during May was the highest of any month since June, 1927. It was 1 per cent greater than April, but 2 per cent less than in May, 1927.

Average employment in the first five months of 1928 was 5 per cent below that in the same period last year. Of the 183 reporting concerns, 83 revealed increases in May over April, 88 decreases and 12 no change. The index of 94 in the automobile and automobile parts group was 8 per cent greater than in April, although it was a drop of 9 per cent from May, 1927. The increase from April was shared by 29 of the 41 reporting companies. In the construction industry May employment was 13 per cent higher than in April and 11 per cent greater than in May, 1927. Reports from 592 concerns in all manufacturing lines showed that the number of wage earners was the highest since May, 1927. These figures are given in the current bulletin on employment issued by the Bureau of Business Research of Ohio State University.



BOOK REVIEWS



Metallurgy of Iron and Steel. By H. M. Boylston, professor of metallurgy, Case School of Applied Science, Cleveland. Pages, 571, 426 illustrations, 6 x 9 in. Published by John Wiley & Sons, Inc., New York. Price, \$5.

Even a casual examination of this book reveals one of its notable excellences, namely, a wealth of excellent pictures. It may be a criticism of descriptive metallurgical literature generally that it is inadequately illustrated. Too much dependence is placed on sketches and mechanical drawings, which have meaning to the informed engineer, but which seldom erect a correct picture in the mind's eye of the student. A large proportion of the views in Professor Boylston's new book are halftones, collected from many sources.

Nearly all of the pictures have a "courtesy line," and a needless number of references to original authorities clutter up the text. Before many pages are passed the false impression grows that the author has compiled a series of abstracts, rather than distilling from a wide reading and a ripe experience the essence of his subject for the information of students. For instance, in the chapter on ingots and ingot making a series of 12 figures are "Courtesy Gathmann Engineering Co." If one did not know that the author in his younger days was Carnegie Research Scholar for the British Iron and Steel Institute and studied the relative merits of various agents for the deoxidation of steel, one might believe that his information on ingot quality came from commercial sources, more or less biased.

The preface gives a list of men in practice who have critically examined the chapters covering the respective specialties. So it would be difficult to find misstatements of fact. Lacking errors in detail (and since a book review would be a failure without finding some mistakes), it may not be amiss to point out at least one error in balance: Seventeen pages are used to describe the acid open-hearth process; three are made to suffice for the basic variety, while eight are devoted to Blaw-Knox patents on furnace details. This hardly seems in keeping with the facts, namely, that 40 times as much steel is made in the United States by the basic open-hearth as is made in the acid furnace.

Where the author really strikes his stride, however, is when he leaves behind him the smelting of ore, refining of steel and its mechanical treatment, and describes the inner structure and properties of metal as they are affected by heat treatment. In this latter third of the work a very clear exposition of metallography is given, as nearly up to date as a text book can be. Knowing the author's constant association with Professor Sauveur of Harvard University, and the latter's published views on the hardness of beta iron, the reviewer looked with interest for an exposition of the hardening theory. But alas, the question is neatly parried by referring the interested student to Sauveur's work published in 1920. This hardly seems fair to Professor Boylston's fellow townsmen, Messrs. Jeffries and Archer, who are widely credited with having proposed a very understandable and useful theory of hardening in more recent years. But it may be a justifiable course to pursue in an elementary text book.

E. E. T.

The Engineering Index for 1927. Pages, 898, 6½ x 9 in. Published by American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York. Price, \$8.50.

Each year the Engineering Index grows in number of citations and in size of volume, which reflects not only the growing volume of technical literature, but the steadily increasing scope of the field included within the survey. During 1927 over 800 publications were regularly examined, and the present volume contains information about approximately 17,000 articles, each citation giving the title, author, publication, date and

page, and a brief statement of the scope of the text. A commendable practice is the avoidance of cryptic abbreviations, which, while understandable to the indexer, are Greek to an engineer user of such a volume as this. While it would be easy to criticize the abstracting of articles, it would be hard to suggest any practicable machinery whereby this work could be improved at reasonable cost, considering the comprehensive field being covered.

Large as the present volume is, it is expected that next year the volume will be still larger. Carlos de Zafra, director of Engineering Index, has organized a staff which will mail index cards weekly to subscribers for the service, selecting all cards containing current information on the particular portions of the engineering field desired by the recipient. The number of publications (particularly those in foreign languages) will be increased to make this prompt review even more inclusive than former efforts.

Aluminum—The Metal and Its Alloys (A Critical Descriptive Treatise).

By M. G. Corson, including chapter on "Structurography" prepared in cooperation with J. R. Vilella. D. Van Nostrand Co., New York, 1926. Pages 291, with 117 plates. Price, \$8.

This book is addressed to "readers interested in aluminum," but special reference is made to those connected with the industry. The book is divided into six parts, and subject matter is indicated by the following titles:

- Part 1.—Properties of Metallic Aluminum.
- Part 2.—Systematic Description of Binary Aluminum Alloy Series.
- Part 3.—Technology of Aluminum Alloys.
- Part 4.—Aluminum and Corrosion.
- Part 5.—Aluminum Alloys in Engineering Work.
- Part 6.—"Structurography" of Aluminum and Its Alloys.

There is some additional matter in appendices and also a four-page subject index.

This is an individualistic rather than an orthodox work, both as to subject matter and manner of treatment. It seems likely to be of more interest and use to the research worker than to those engaged in the practical manufacture or use of aluminum. Together with a considerable body of useful information and stimulative ideas is an unfortunate scattering of inaccurate or misleading information, so that the uninformed reader must regard the statements with some degree of caution. Furthermore, instead of presenting a complete and balanced picture of the subject, the author seems to have selected and emphasized the subject matter to a large extent in accordance with his own experience and interest.

Good judgments are strangely mixed with opinions which to the reviewer seem poor. For example, the last paragraph on page 106 presents a very good statement of the properties of aluminum-copper alloys of low copper content. This is immediately followed by a paragraph stating that "aluminide of copper . . . becomes comparatively weak at temperatures as low as 150 deg. C., thus injuring the strength of the alloy as a whole." As a matter of fact, this constituent (CuAl₂) is one of the most effective in maintaining the strength of aluminum at elevated temperatures.

Some of the author's advice to the users of aluminum must certainly be taken with reservation. It is suggested, for example, that in certain products it should be insisted that the iron content should not exceed 0.2 per cent. Those familiar with the industry know that this is not practical at the present time, and, as a matter of fact, it is very doubtful whether such a limitation would produce any desirable results in a majority of products, even if it were practical. The discussion of piston alloys contains a pertinent statement questioning the importance of strength at high temperatures, but proceeds with some statements regarding hardness which are at variance with the best

informed present opinion. It is stated that the use of magnesium, "as recommended by some authors," serves no rational purpose and that it is better to have a piston material with 28,000 lb. strength and 1.5 ft. lb. impact than one with 38,000 lb. strength but 0.5 ft. lb. impact. The facts are that magnesium is now used in practically all commercial aluminum pistons, and that the production of pistons still further hardened by heat treatment is considered to have been one of the major developments of the last few years.

In general, the book may be recommended to the investigator and the student in search of ideas and data to be considered critically, but is not recommended to the engineer or manufacturer who is looking for well established facts and conservative opinions about aluminum.

R. S. A.

Protective Metallic Coatings. By Henry S. Rawdon. American Chemical Society, Monograph No. 40, 277 pages, 6 x 9 in. Chemical Catalog Co., Inc., New York. Price, \$5.50.

When books come to the Book Review Editor, he usually casts about in his mind for the name of some man in his acquaintance who is reasonably familiar with the subject matter, and sends him the book with the request that he write a notice which will appraise the scope and quality of the book. But before this routine matter was attended to, this book on metallic coatings had answered questions on such varied things as the rate of solution of iron in a galvanizing kettle, the Crapo process, cadmium plating, planishing and the salt spray test.

Evidently it is too valuable to give away!

Doubtless Doctor Rawdon would disclaim any authoritative knowledge on many of the obscure points touched by the literature he has examined, but throughout this entire book there is every evidence that the notations have been made with nice discrimination and in the light of broad knowledge of metallurgical fundamentals. So the book is far more than a compendium of abstracts. It is a mine of information and suggestion for anyone who deals with corrosion resistance and surface protection.

Cements, Limes and Plasters: Their Materials, Manufacture and Properties. Third revised edition. By Edwin C. Eckel. Pages 700, 6 x 9 in., 161 figures. John Wiley & Sons, Inc., New York. Price \$7.

A first impression is of a very well printed book. Paging through less hastily reveals a comprehensive treatment of the plastic materials used in engineering. If one stops to read here and there, he quickly discovers a lucid text, evidently written by an author with clear-cut opinions on many and diverse matters, and with no hesitation about allowing those opinions to modify his views about technology of his subject and to state the conclusions so reached clearly and vigorously.

It so happens that, aside from chapters of close interest to men in iron and steel production, such as the utilization of blast furnace slag, the text has other points worthy of note. One such is where an analysis of the major elements of cost is given, and the conclusion (doubtless verified by experience) that, if a cement mill sells its product for only enough to cover the cost of getting the raw materials, the cost of manufacture and the administrative and selling costs, then the mill would pay its way, yet would not remain in the hands of the original owners, and the end of several such financial reorganizations would find an obsolete plant and exhausted quarries. Such observations, of course, do not exclusively apply to the cement industry.

Manufacture of cement is now going through an interesting stage. As Mr. Eckel points out, Portland cement is commonly regarded as the typical representative of the entire group of engineering plastics. As a matter of fact, it is the most modern of all the cementing materials, some of which date back 10,000 years or more. And in the few brief years of its existence Portland cement had become so standardized by uniform specifications that no progress in manufacturing and no additional requirement by the consumer had been made. During the war the demand for cement of high early strength—concrete that could be used in 24 hr. instead of 24 days—was successfully met. With

this advance made, engineers and researchers turned their attention to the additional problem of making a cement which would permanently resist alkaline ground water and sea water. Consequently the present day is one of rapid development; many new ideas are being proved. Mr. Eckel says that somewhere in this mass of attempts will be found the processes and products which will serve as the bases for the next long period of utilization and standardization.

At present, the high early strength Portland cements are being made by giving better attention to the raw material, the burning and to a finer grinding. Alkali-proof cements, on the other hand, have such different chemical compositions that they have been called alumina cements, and are made by complete melting, ordinarily in a blast furnace or electric furnace, rather than sintering or clinkering in a rotating kiln. Mr. Eckel's survey of the raw materials available in great tonnage indicates that in the not distant future the blast furnace will be charged with an aluminous iron ore, so low in silica that the slag will be one of the new cements and the pig iron will be a valuable by-product.

New Books Received

Safety and Production. A report by the American Engineering Council. Pages 414, 6½ x 9½ in., illustrated. Published by Harper & Brothers, 49 East Thirty-third Street, New York. Price, \$5.

Elements of Economic Geology. By J. W. Gregory. Pages 312, 5 x 7½ in., illustrated. Published by E. P. Dutton & Co., 681 Fifth Avenue, New York. Price, \$3.25.

Patent Essentials. By J. F. Robb. Pages 446, 6 x 8½ in., illustrated. Published by Funk & Wagnalls Co., 354 Fourth Avenue, New York. Price, \$5.

Descriptive Geometry. By William H. Kirchner and Henry C. T. Eggers. Pages 183, 6 x 9¼ in., illustrated. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$2.25.

Abrasive Handbook. By Fred B. Jacobs. Pages 547, 6¼ x 9¼ in., illustrated. Published by Penton Publishing Co., Cleveland. Price, \$5.

Employee Stock Purchase Plans in the United States. Pages 245, 6¼ x 9¼ in. Published by National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, \$2.50.

Journal of the Institute of Metals, 1927. Vol. XXXVIII. Pages 813, 5½ x 8½ in., illustrated. Published by the Institute of Metals, 36 Victoria Street, London, S. W. 1, England.

Journal of the Iron and Steel Institute, 1927. Vol. CXVI. Pages 736, 5½ x 8½ in., illustrated. Published by the Iron and Steel Institute, 28 Victoria Street, London, S. W. 1, England.

Foundry Work. Second edition. By R. E. Wendt. Pages 236, 5 x 7¼ in., illustrated. Published by McGraw-Hill Book Co., 370 Seventh Avenue, New York. Price, \$2.

Scientific Purchasing. By Edward T. Gushee and L. F. Boffey. Pages 196, 6 x 9¼ in., illustrated. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$3.

Electric Heating. By Edgar A. Wilcox. Pages 469, 6¼ x 9¼ in., illustrated. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, \$5.

Engineering Abstracts. No. 35. Pages 236, 5½ x 8½ in., illustrated. Published by the Institution of Civil Engineers, Great George Street, Westminster, S. W. 1, London.

Le Molle. (A treatise on the manufacture and theory of springs, in Italian.) Four volumes. By Piero Gradenigo. Pages 800, 6¼ x 10¼ in., illustrated. Published by S. Lattes & Co., Via Garibaldi, 3, Turin, Italy.

A Metallographic Study of the Path of Fatigue Failure in Copper. By Herbert F. Moore and Frank C. Howard. Bulletin 176, University of Illinois Engineering Experiment Station, Urbana, Ill. Pages 27, 6 x 9 in., paper binding. Price, 20c.

Industrial and Railroad Amalgamations. By Sir Josiah Stamp, chairman London, Midland & Scottish Railway. Pages 32, pamphlet, 5½ x 8½ in. Published by London General Press, 3 Arundel Street, Strand, London, W. C. 2, England. Price, 2s.

Largest Exports in Seven Years

May Shipments of Iron and Steel 25 Per Cent Above
April—Imports Slightly Higher Than in
April—Heavy Scrap Exports

WASHINGTON, June 26.—Aggregating 267,890 gross tons, exports of iron and steel products from the United States in May were the highest for any month since February, 1921, when they totaled 393,328 tons. The May export movement increased 52,706 tons over that of April, when the total was 215,184 tons. Exports for the five months ended with May, amounting to 1,096,690 tons, made a gain of 147,910 tons over the corresponding period of last year, when the total was 948,780 tons. The daily average movement for the 31 days of May was 8890 tons, compared with a daily average of 7172 tons during the 30 days of April. While one outstanding reason for the sharp stimulus in exports of May was the heavy movement of scrap, amounting to 59,417 tons, the largest movement of any single product, gains were made in 28 of the 39 classifications when compared with April, while 10 showed declines and one, pig iron, was identical with that of April, at 3701 tons.

Imports in May totaled 72,106 tons, reflecting a gain of only 527 tons over April's total of 71,579 tons. For the five months ended with May, imports aggregated 324,076 tons, an increase of 9161 tons over the corresponding period of 1927. A feature of the May import movement was the sharp drop in incoming shipments of pig iron, which amounted to 9732 tons, against 20,845 tons in April. There were gains in 18 of the 27 import classifications, some of only a few tons, and losses in the remaining nine.

The outward movement of scrap in May, 59,417 tons, represented an increase of 18,801 tons over April's total of 40,616 tons. The sharp increase in exports of scrap during the past few months is attributed largely to the embargoes or prohibitory export duties in force against this product in a number of foreign countries. Of the May scrap exports, 18,972 tons went to Italy; 16,827 tons to Canada; 8785 tons to Japan; 8435 tons to Poland and Danzig and 4858 tons to Germany.

United States Imports of Iron and Steel Products in May

(In Gross Tons)			
Austria	25	Canada	7,099
Belgium	19,951	Mexico	88
Czechoslovakia	25	Virgin Islands of U. S.	3
France	16,314	British India	3,326
Germany	10,839	China	1
Italy	26	Japan	1
Netherlands	2,101	Syria	13
Norway	45	New Zealand	1
Spain	1	Morocco	5
Sweden	3,058		
Switzerland	1	Total	72,106
United Kingdom	9,183		
<i>Total Europe</i>		<i>61,569</i>	

Total Europe 61,569

Imports of Iron and Steel into the United States

	May		Five Months Ended May	
	1928	1927	1928	1927
Pig Iron	9,732	17,164	63,496	47,322
Ferromanganese*	5,094	2,043	18,535	10,792
Ferrosilicon†	133	1,080	1,345	5,400
Ferrochrome‡	38	12	262	382
Scrap	3,958	6,750	15,126	27,930
Pig iron, ferroalloys and scrap	18,955	27,049	98,764	91,826
Steel ingots, blooms, billets and slabs, etc.	3,712	857	9,812	5,509
Wire rods	1,824	1,388	8,298	6,002
Semi-finished steel	5,536	2,245	18,714	11,511
Rails and splice bars	863	1,139	6,364	6,876
Structural shapes	16,010	14,241	74,248	62,773
Boiler and other plates	482	79	942	2,255
Sheets and saw plates	3,247	1,507	12,729	6,124
Steel bars	9,681	9,788	44,570	41,615
Bar iron	117	153	932	2,118
Hoops, bands and cotton ties	1,368	3,375	9,306	12,259
Tubular products (wrought)	4,125	9,743	18,282	24,861
Nails, tacks, staples	821	683	3,155	2,471
Tin plate	384	750	550	850
Bolts, nuts, rivets and washers	39	11	126	97
Round iron and steel wire	239	646	1,678	1,925
Barbed wire	308	352	1,566	2,562
Flat wire; strip steel	318	268	1,059	1,206
Steel telegraph and telephone wire	82	2	128	27
Wire rope and strand	121	179	619	1,104
Other wire	46	26	277	229
Roller and finished steel	38,251	42,942	176,531	169,352
Cast iron pipe	9,150	7,257	28,992	40,664
Castings and forgings	214	321	1,675	1,562
Total	72,106	79,814	324,076	314,915
Manganese ore*	16,283	18,340	70,811	111,131
Iron ore	211,270	186,208	1,079,521	1,048,941
Magnetite	1,869	2,736	19,646	22,980

*Manganese content only.

†Silicon content only.

‡Chromium content only.

Destination of Iron and Steel Exports from the United States

Country of Destination	May, 1928	January Through May	
		1928	1927
North and Central America and West Indies	133,405	526,192	462,222
Canada and Newfoundland	117,338	434,323	357,063
Cuba	4,255	25,891	34,889
Mexico	7,430	31,825	37,621
Guatemala	440	5,297	3,710
Panama	923	7,061	7,567
Salvador	351	1,217	2,489
British West Indies	902	3,356	6,726
Other West Indies	863	10,451	6,240
Other Central America	903	6,771	5,917
South America	40,326	184,073	160,618
Argentina	8,768	39,369	35,171
Brazil	8,840	39,677	35,919
Chile	7,894	34,157	11,774
Colombia	5,843	29,517	28,204
Peru	1,011	11,055	13,878
Uruguay	593	3,657	6,052
Venezuela	6,679	23,803	28,516
Other South America	698	2,838	1,104
Europe	44,276	107,906	63,961
Belgium	1,379	6,494	1,340
France	553	1,969	1,753
Greece	1,255	1,405	1,003
Italy	20,178	30,639	14,013
Netherlands	263	1,151	1,468
Russia	42	1,402	2,118
United Kingdom	4,904	21,503	29,861
Other Europe	15,702	43,433	12,405
Far East	48,571	272,258	252,646
British Malaya	629	3,281	5,214
China	6,702	50,666	29,923
Dutch East Indies	1,863	11,135	18,610
India and Ceylon	1,325	12,194	14,052
Japan and Chosen	28,007	141,185	131,151
Kwangtung	991	2,905	11,965
Philippine Islands	7,169	40,779	20,277
Australia	648	5,991	14,111
New Zealand	102	952	651
Other Asia and Far East	1,135	3,170	6,692
Africa	1,312	6,261	9,333
British South Africa	372	2,793	4,196
Egypt	881	2,456	2,178
Mozambique	12	320	2,421
Other Africa	47	692	538
Total	267,890	1,096,690	948,780

Exports of ingots and semi-finished steel in May, 18,823 tons, showed an increase of 11,165 tons over April, totaling 7657 tons. Plain shapes exported in May, 18,498 tons, made a gain of 4845 tons over April with a total of 13,653 tons. Canada took 15,433 tons in May and Chile, 902 tons. A gain of 3591 tons was made in exports of black steel sheets in May, with a total of 15,272 tons, against 11,681 tons in April. Canada was the destination of 7849 tons of these exports in May, while Japan took 5140 tons. Exports of tin plate in May, 22,462 tons, made a gain of 2653 tons over April, when the total was 19,809 tons.

Tin plate exports in May, consistent with their usual course, were widely distributed, shipments going to Japan, 5438 tons; Canada, 4183 tons; China, 2870 tons; Greece, 1220 tons; Brazil, 1097 tons; Argentina, 1081 tons; Mexico, 1058 tons, and Italy, 1037 tons. Exports of plates in May, 13,163 tons, showed a gain of 3120 tons over April. Canada took 11,695 tons last month. Of the 13,726 tons of steel bars exported in May, a gain of 1066 tons over April's 12,660 tons, Canada took 10,850 tons and the United Kingdom 1042 tons. Galvanized sheets to the quantity of 14,175 tons were exported in May, a gain of 1641 tons over April, with 12,534 tons. Canada took 4498 tons in May; the Philippine Islands, 1875 tons; and Mexico, 1134 tons.

Exports of rails represented the largest decline in May, 18,251 tons, as against 24,449 tons in April, a drop of 6198 tons. The markets of Canada and Japan are showing less demand for foreign rails because apparently, those countries are supplying their own rails in greater quantity. Of the May shipments of rails, Canada took 3201 tons and Japan 2775 tons. The largest foreign buyer was Chile, which took 6184 tons; Brazil took 1806 tons. Casing and oil line pipe exports in May were 10,193 tons. Venezuela took 2641 tons; Colombia, 2139 tons; Mexico, 1678 tons; Argentina, 1280 tons; and Canada, 1018 tons. Exports of black welded pipe in May totaled 6090 tons, of which 1310 tons went to Japan, 1177 tons to Canada and 597 tons to Argentina.

Canada took 116,634 tons, or approximately 43 per cent, of the total May exports. For the five months Canada took 432,278 tons, or approximately 39 per

cent, of the total exported during that period. Exports to Japan in May amounted to 28,007 tons and during the five months they aggregated 141,185 tons.

Great Britain and India were the sources of the largest imports of pig iron in May, supplying 4556 and 3026 tons respectively. Of the 5094 tons of ferromanganese imported during that month, 3468 tons came from Canada and 1551 tons from the United Kingdom. Of the 16,283 tons of manganese ore imported in May, 7372 tons came from Soviet Russia, 6560 tons from Brazil and 2335 tons from India. Chile, supplying 141,800 tons, accounted for more than two-thirds of the iron ore imports in May, totaling 211,270 tons.

Of the 16,010 tons of structural shapes imported that month, 8758 tons came from Belgium, 4357 tons from France and 2739 tons from Germany. Belgium supplied 5199 tons of the 9681 tons of steel bars imported in May; France, 1964 tons; Sweden, 1213 tons and Germany, 1170 tons. France furnished 7524 tons of the 9150 tons of cast iron pipe imported, and Belgium, 1619 tons. Of the 4125 tons of "other pipe" imported, largely seamless tubes, 2599 tons came from Germany, 546 tons from France, 376 tons from the United Kingdom and 347 tons from Canada.

Belgium led as the source of the total May imports, furnishing 19,951 tons. France was second, with 16,314 tons, and Germany third, with 10,839 tons.

Railroads Save by Reclaiming Old Material

ATLANTIC CITY, N. J., June 26.—Through reclamation of old materials, in accordance with the general policy of the rail carriers to bring about greater efficiency and economy in operation, substantial savings are being realized by the railroads. This was shown by a report by the committee on control of shop manufacturing orders for stock material, submitted at the closing session here last Friday of the ninth annual convention of the Purchases and Stores Division of the American Railway Association. As a result of this reclamation work, the railroads are making use of practically every bit of old material so long as it is possible and economical to do so.

Hundreds of articles, such as bolts, mail track brackets, steel for locomotive cabs, coach steps, drills, signal blades for semaphores, tongs for handling rails and ties, track levels, hinges for gates, steel rods of all kinds, metal plates, materials for switches, chisels, springs, cylinder heads and many other articles needed in railroad operation, are being converted by the railroads from old iron and steel. Out of old metallic roofing, empty powder cans or carbide cans emerge bright new tin buckets, cups or other tinware. Second-hand rails are made into guide rails, while carwheels which have become flat are again restored to active use by grinding.

Further Gain in Steel Barrels

Production of steel barrels in May exceeded the record-breaking total of April, with an aggregate of 696,281 units from 27 companies, according to reports to the Department of Commerce. The excess over April's 667,827 units was 4 1/4 per cent. The figure compares with production in May, 1927, of 588,077 barrels.

Shipments in May were very close to production, as was the case in April and March, both of which showed exceptionally high figures. Unfilled orders at the end of May included 324,549 units for shipment within 30 days and 932,568 units for later shipment.

Members of the Steel Barrel Manufacturers' Institute shipped 410,390 barrels during the month, and had 572,443 on order as of June 1. Their business in May was reported at \$1,219,566. Capacity was engaged at the average rate of 61 per cent, being 28 per cent for I. C. C. barrels and 70 per cent for light barrels.

Locomotive fuel costs in April for Class 1 railroads are reported at \$2.57 a net ton. This represents an increase of 1c. over the average cost for March. For the three reported districts, the costs in April vary from \$2.13 for the Southern district to \$2.90 for the Western district.

Exports of Iron and Steel from the United States
(In Gross Tons)

	May		Five Months Ended May	
	1928	1927	1928	1927
Pig iron	3,701	4,115	19,655	17,767
Ferromanganese	1,060	101	4,523	218
Scrap	59,417	26,728	185,537	78,599
Pig iron, ferroalloys and scrap	64,178	30,944	209,715	96,493
Ingots, blooms, billets, sheet bar, skelp	18,823	7,165	51,732	27,239
Wire rods	3,501	1,065	13,661	6,987
Semi-finished steel	22,324	8,230	65,393	34,226
Steel bars	13,726	8,989	56,952	49,702
Alloy steel bars	1,877	457	6,216	2,297
Iron bars	255	297	1,660	2,029
Plates, iron and steel	13,163	15,925	57,197	60,226
Sheets, galvanized	14,175	12,538	64,656	71,847
Sheets, black steel	15,272	17,722	71,088	78,093
Sheets, black iron	1,203	1,228	5,876	7,239
Hoops, bands, strip steel	6,282	3,592	22,877	20,804
Tin plate; terne plate	22,462	18,597	102,823	134,224
Structural shapes, plain material	18,498	15,845	70,517	54,478
Structural material, fabricated	7,181	5,109	30,818	26,341
Steel rails	18,251	16,554	97,103	86,316
Rail fastenings, switches, frogs, etc.	2,637	4,752	25,576	14,974
Boiler tubes, welded pipe and fittings	21,141	20,751	98,227	127,477
Plain wire	3,808	2,972	19,041	13,163
Barbed wire and woven wire fencing	7,156	5,085	31,427	18,245
Wire cloth and screening	119	234	677	959
Wire rope	402	415	2,148	1,999
Wire nails	1,830	619	7,307	2,991
Other nails and tacks	772	591	4,174	3,255
Horseshoes	37	53	179	202
Bolts, nuts, rivets and washers, except track	1,227	1,007	5,219	4,784
Rolled and finished steel	171,474	153,332	781,758	781,645
Cast iron pipe and fittings	3,447	2,427	14,261	10,805
Car wheels and axles	1,501	4,444	5,922	8,658
Iron castings	1,030	740	5,632	5,231
Steel castings	1,180	660	4,428	3,276
Forgings	1,379	634	3,677	2,391
Castings and forgings	8,537	8,905	33,920	30,361
All other	1,377	1,297	5,904	6,055
Total	267,890	202,708	1,096,690	948,780

Continental Prices Slightly Easier

Light Buying but Mills Are Filled—French Await Stable Franc
—Steel Cartel May Increase Quotas

(By Cable)

LONDON, ENGLAND, June 25.

CLEVELAND pig iron is quiet and one more blast furnace has been blown out. The Tyneside holiday week is being observed and the Glasgow Fair holidays begin in July, so that little improvement in general conditions is expected until August.

Hematite iron is steadier as a result of decreased output, but demand is still poor. Foreign ore is quiet and there is no indication of a termination in the Swedish miners' strike, so that prices are maintained.

Heavy steel products generally are quiet, but light materials are moving more freely, particularly to domestic consumers. Export demand is poor and mills rolling plates and shapes are in need of orders. In the past week, the Prime Minister interviewed steel makers, who are asking for measures to safeguard the heavy steel industry, and stated that the Government policy will not be changed under the present Parliament. The Canadian-Pacific is about to place orders for two 20,000-ton liners with British yards.

STEEL CARTEL TO MEET

Production Quotas May Be Increased—Polish Membership Still a Problem

BERLIN, GERMANY, June 10.—The International Steel Cartel meets at Düsseldorf, June 25. Discussion is expected to center upon the total production quota for the third quarter. The present quota is at the rate of 29,287,000 metric tons a year and, according to report, the Western European members of the cartel will propose an increase of about 2,000,000 tons. Another possibility is a proposal to increase only the quotas of Belgium and France.

In the first quarter of this year, all member countries exceeded their quotas of production for the first time since establishment of the cartel. The excess production of France was only 12,000 tons, on which a

Tin plate bars are active and the market strong, with makers facing a continued shortage of scrap. Some sellers for forward delivery are asking up to £6 5s. (\$30.44) per ton, delivered, for Welsh bars.

Tin plate is quieter as a result of the recent decline in the price of tin and consumers are anticipating lower prices. Makers, however, are well sold for many weeks. The minimum agreed price for tin plate wasters is now 17s. (\$4.15) per base box, f.o.b. works port, and some sellers are asking 6d. (12c.) more.

Galvanized sheets are strong, with higher costs, and the agreed minimum price for No. 24 gage corrugated sheets in bundles has been increased to £2. 7s. 6d. (\$65.14) per ton, f.o.b. works port. Demand is generally confined to small lots. Black sheets are quieter.

Continental iron and steel demand is quieter and some prices have become easier as a result of the return of more works as sellers, but prices have been re-strengthened by the Antwerp dock strike. Luxemburg reports quotations of the European Rail Makers' Association unchanged.

penalty of \$4 per ton was levied. In the last quarter of 1927, the French members were 144,000 tons under their total quota and received a premium of \$4 a ton. In the first quarter of this year Belgium was 77,680 tons over the quota. In April, however, these countries were again producing less than the fixed quotas, and if this has continued to be the case for the second quarter, there may not be so much pressure for an increase of the allotment.

The German attitude on increase of quotas is expected to depend upon whether or not a change in the present system of penalties is suggested. German members pay \$1 a ton on overproduction for the domestic market and \$4 a ton on overproduction which goes for export. The recent ratio of domestic to export production has been 72 to 28. In the first quarter of this year, the German quota was fixed at 3,161,000 tons, a figure which was exceeded by 1,052,000 tons. Germany, having paid heavy penalties in the past for

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.87 per £ as follows:

Durham coke, del'd.	£0 17½s.	to £0 17¼s.	\$4.27	to	\$4.33
Bilbao Rubio ore*	1 2½		5.48		
Cleveland No. 1 fdy.	3 8½		16.56		
Cleveland No. 3 fdy.	3 6		16.07		
Cleveland No. 4 fdy.	3 5		15.83		
Cleveland No. 4 forge	3 4½		15.71		
Cleveland basic (nom.)	3 5		15.83		
East Coast mixed...	3 9	to 3 10	16.81	to	17.05
East Coast hematite	3 10½		17.17		
Rails, 60 lb. and up.	7 15	to 8 0	37.75	to	38.96
Billets	6 5	to 6 15	30.44	to	32.88
Ferromanganese	13 15		66.97		
Ferromanganese (export)	13 0	to 13 5	63.31	to	64.53
Sheet and tin plate bars, Welsh	6 0		29.22		
Tin plate, base box.	0 18½	to 0 18¼	4.51	to	4.58
Black sheets, Japanese specifications.	13 7½		65.14		
C. per Lb.					
Ship plates	7 12½	to 8 2½	1.66	to	1.77
Boiler plates	9 0	to 10 10	1.95	to	2.28
Tees	8 2½	to 8 12½	1.77	to	1.99
Channels	7 7½	to 7 17½	1.60	to	1.71
Beams	7 2½	to 7 12½	1.55	to	1.66
Round bars, ¾ to 3 in.	7 5	to 7 15	1.58	to	1.69
Steel hoops	9 0	to 10 0	1.95	to	2.17
Black sheets, 24 gage	9 15	to 9 17½	2.12	to	2.14
Gal. sheets, 24 gage	13 7½	to 13 10	2.90	to	2.93
Cold rolled steel strip, 20 gage, nom.	14 0	to 14 5	3.04	to	3.10

*Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)

Foundry pig iron (a):					
Belgium	£3 3s.	to £3 5s.	\$15.34	to	\$15.83
France	3 3	to 3 5	15.34	to	15.83
Luxemburg	3 3	to 3 5	15.34	to	15.83
Basic pig iron (nom.):					
Belgium	3 1	to 3 2	14.85	to	15.09
France	3 1	to 3 2	14.85	to	15.09
Luxemburg	3 1	to 3 2	14.85	to	15.09
Coke	0 18		4.39		
Billets:					
Belgium	4 15		23.14		
France	4 15		23.14		
Merchant bars:					
Belgium	5 14		1.26		
France	5 14		1.26		
Luxemburg	5 14		1.26		
Joists (beams):					
Belgium	4 18½	to 5 0	1.08	to	1.10
France	4 18½	to 5 0	1.08	to	1.10
Luxemburg	4 18½	to 5 0	1.08	to	1.10
Angles:					
Belgium	5 10	to 5 12½	1.21	to	1.26
½-in. plate:					
Belgium (a)	6 11		1.44		
Germany (a)	6 11		1.44		
¾-in. ship plate:					
Belgium	6 7		1.40		
Luxemburg	6 7		1.40		
Sheets, heavy:					
Belgium	6 1		1.34		
Germany	6 1		1.34		

(a) Nominal.

overproduction, is not inclined to agree to any rearrangement designed to relieve the Western producing countries, which have been profiting by underproduction.

The question of Polish membership in the International Steel Cartel has undergone no material change. The chief obstacle is the amount of export quota to be placed at the disposal of Polish mills. Originally Poland demanded 500,000 tons a year and the cartel offered 300,000 tons. Later Poland reduced its demand to almost the level offered. It is pointed out that, although the difference of opinion as to the proper export quota would prove insignificant if the proposed cartel selling syndicates are established, Poland, as an outsider, might undersell whatever price was officially fixed. However, there is no present prospect of any action being taken toward the formation of such syndicates, as the recent rise in European prices has temporarily made such action of less importance. Another question is that of Poland's joining the European Rail Makers' Association. At present Poland has a heavy tonnage of rail orders and is not disposed to permit the association to establish a maximum production.

The question of special treatment of members in the Central European group, Austria, Czechoslovakia and Hungary, has apparently been settled for the present. For the first two quarters of 1928 the penalties of this group were reduced by one-half and a commission was appointed to suggest a permanent regulation. This commission will probably report at the Düsseldorf meeting.

BELGIAN PRICES STABILIZING

Buying of Steel Is Light but Market Is Firm—Inquiries Appearing from South China

ANTWERP, BELGIUM, June 8.—Prices of iron and steel are becoming stable at the present level, and, although buying is rather cautious, mills seem to experience no difficulty in obtaining their full schedule of prices. Despite the lack of buying, producers are well booked with orders for delivery during the next few months and appear to be in a position to withstand pressure for lower quotations for several weeks. The situation seems favorable both in the export and home markets, as stocks both here and abroad are apparently small, and prices, even at the present level, are still under the pre-war market and below British and American quotations.

Export trade promises well for the future. Both German and French domestic business continue active and new business is developing in foreign markets, notably South China, which is inquiring for some desirable tonnages of material.

Pig Iron.—Despite the strength in steel products, pig iron shows a tendency toward weakness. Prices are being maintained fairly well, but competition is keen and the pig iron syndicate is not uniformly successful in maintaining its prices. The export quotation on No. 3 phosphoric foundry iron continues at £3 2s. 6d. (\$15.25) per gross ton, f.o.b. Antwerp.

Semi-Finished Material.—Buying is light, but the market continues firm, with only limited tonnages available for immediate delivery. Blooms are scarce and mills have no difficulty in maintaining the market at £4 7s. 6d. (\$21.45) per ton for 8-in. to £4 15s. (\$23.30) per ton for 4-in. blooms, f.o.b. Antwerp. Billets are also firm at £4 16s. (\$23.50) per ton for 3-in. to £4 17s. 6d. (\$23.90) per ton for 2-in. billets, f.o.b. Antwerp. Mills show slightly more interest in sheet bar business, but exhibit no inclination to offer concessions from the present market level.

Finished Material.—Prices of all steel products are firm, despite the lack of any substantial buying by consumers. Mills are showing greater willingness to accept orders, but only at the prevailing price level, although buyers are actively seeking concessions. Steel bars, however, appear to be somewhat easier in price. Orders are still difficult to place for early delivery. The current market ranges from £5 15s. 6d. to £5 16s. 6d. per ton (1.28c. to 1.29c. per lb.) for normal specifications. On rounds as low at £5 14s. per ton (1.26c. per lb.) is reported to have been done, although

the usual quotation is £5 15s. (1.28c. per lb.), f.o.b. Antwerp. Beams are in good demand, with prices firm at £5 per ton (1.10c. per lb.), f.o.b. Antwerp. Corrugated bars are quoted at £5 18s. 6d. per ton (1.31c. per lb.). There is a good export demand for hot-rolled steel hoops, and the market is firm at £6 17s. 6d. per ton (1.51c. per lb.), f.o.b. Antwerp.

CZECHOSLOVAK BUSINESS GOOD

Domestic Trade Shows Large Increase—Skoda Works Had Profitable Year in 1927

PRAGUE, CZECHOSLOVAKIA, June 7.—Activity in the iron and steel markets was well maintained throughout 1927, and in the first quarter of this year domestic orders for pig iron exceeded the total for the corresponding quarter of 1927 by 28 per cent, while purchases of rolled steel products were 20 per cent greater. Much of this activity has been contributed by increased building operations throughout the country. Thus far this year exports of pig iron and steel products have continued at about the same level as in 1927, but no official statistics are yet available except on steel ingot output, which was 25 per cent greater during the first quarter than in the first quarter of last year.

The automobile industry is active, although importation of cars in the first quarter of 1928 was 11 per cent greater than in the first quarter of 1927. Exports, however, were 60 per cent greater. Imports of motor cars increased from the United States, Germany, Austria and Belgium and decreased from Italy and France. In the first quarter of this year 313 cars were received from the United States, which was about double the arrivals in the first quarter of 1927.

The Skoda Steel Works A. G. at Pilsen has declared a dividend for 1927 of 56 cr. (\$1.66) per share, which compares with 50 cr. (\$1.48) per share in the preceding business year. Net profits were 43,000,000 cr. (\$1,272,800). The corporation reports a good year of business, as a result of increased domestic buying and active exports. Export business, however, was taken at low prices and this was offset in part by reducing production costs. The Polish branch of the Skoda Steel Works, established in 1927, has developed so satisfactorily that it is planned to add several new lines of production. The corporation has acquired a majority interest in the Uzinele Metalurgice Co., Budapest, Hungary, and has strengthened its position in Moravia by acquiring works which are to be used for electro-technical operations. The Czechoslovakian Berg-und-Huetten Co. has decided to establish a new rolling mill for sheets in Trinec.

Izett, New German Steel, Not Impervious to Caustic Embrittlement

In an attempt to discover some steel not subject to caustic embrittlement which could be used for boilers fed with certain Western alkaline waters, Prof. S. W. Parr and F. G. Straub of the University of Illinois secured samples of "izett," the new type of steel reported by Dr. Ad. Fry in *Kruppsche Monatshefte*, November, 1926, page 185. Izett is said to show no aging effects after cold work. This steel could be cold worked and still have a high impact value, while the ordinary boiler steel would lose its impact strength after cold work. Doctor Fry's theory is that boiler plate is cold worked and highly stressed and then reheated to around 200 deg. C., which lowers the impact value of the steel. A steel of low impact value would crack more easily; consequently, he concludes that the service cracks encountered in boilers are due to the aged steel. He also made the statement that the new steel would not become embrittled under steam and caustic attack, and showed the results of tests where the new steel did not crack in caustic solution.

The results of tests conducted at the University of Illinois on three samples of this steel and described in Engineering Experiment Station Bulletin No. 177 showed that it is not any more resistant to embrittlement than regular American boiler plate. Its chemical analysis is carbon 0.17 per cent, manganese 0.41 per

cent, phosphorus 0.020 per cent, sulphur 0.031 per cent, silicon 0.053 per cent, and nickel 0.030 per cent (possibly residual from ore or scrap). Physical properties as received are as follows: yield point, 32,000 lb. per sq. in.; ultimate strength, 56,500 lb. per sq. in.; reduction of area, 67.5 per cent.

This steel cracked in 20 to 24 hr. when loaded to 40,000 lb. per sq. in. and exposed to boiler water with 300 gm. NaOH per liter and steam pressure of 500 lb. per sq. in.

French Cast Iron Pipe Maker Appoints New American Agent

The foremost French maker of cast iron bell and spigot pipe, the Société Anonyme des Hauts-Fourneaux et Fonderies de Pont-a-Mousson of Nancy, has appointed the Herbert Kennedy Co., Inc., 475 Fifth Avenue, New York, as general sales agent in the United States. The Herbert Kennedy Co. was the first agent for Pont-a-Mousson pipe, appointed in 1920 for the United States, Canada, Central and South America and Cuba. In 1924, B. Nicoll & Co., 294 Madison Avenue, New York, were appointed exclusive agents for the United States, the Herbert Kennedy Co. retaining its agency for Canada, Cuba and the South and Central American countries.

Slight Increase in Orders for Commercial Steel Castings

WASHINGTON, June 23.—Orders for commercial steel castings in May totaled 84,824 tons, or 59 per cent of the monthly capacity of the 144,800 tons of the 128 concerns reporting to the Department of Commerce. They compare with 83,737 tons, or 58 per cent of capacity, in April. Production in May aggregated 91,638 tons, or 63 per cent of capacity, against 85,669 tons, or 59 per cent of capacity, in April.

Of the May orders, 34,954 tons was for railroad specialties, being 52 per cent of this class of capacity, compared with 32,810 tons, or 49 per cent of capacity, in April. Orders for miscellaneous castings in May totaled 49,870 tons, or 64 per cent of this class of capacity, against 50,927 tons, or 66 per cent, in April. For the five months ended with May orders for commercial steel castings were 433,595 tons, compared with 446,291 tons for the corresponding period of last year.

Production for the five months of 1928 totaled 432,233 tons, against 460,456 tons for the corresponding period of 1927.

To Classify Character of Coal for Different Industries

In connection with the convention of the National Association of Purchasing Agents, held at Kansas City, a meeting was held of the National Coal Committee, presided over by B. L. Verner, purchasing agent, Interstate Iron & Steel Co., Chicago. T. W. Harris, Jr., of the Du Pont company, chairman of the committee, suggested that for the coming year the association employ capable engineering service to prepare specifications covering a series of combustion conditions which, as far as possible, would classify average purchasing requirements of various lines of industry, such as the proper coal to be used under certain conditions and with certain equipment. It is planned to send such a query blank to coal users in the association, stoker manufacturers and coal operators.

Standard Sample of Ferrophosphorus

The United States Bureau of Standards has prepared a standard analyzed sample of ferrophosphorus containing 26.17 per cent of phosphorus. This standard is No. 90 in the series and costs \$2 per sample of 75 gm. The sample may be paid for in advance with order or be sent by parcel post c.o.d. in the United States and its possessions. All foreign shipments require prepayment, together with 20c. additional for postage.

FRENCH AWAIT STABLE FRANC

Mills Unwilling to Contract Ahead Until New Value Is Known—Prices Still Below 1913

PARIS, FRANCE, June 11.—As stabilization of the franc (probably at about 124.48 to the pound sterling) is considered imminent, most steel works are unwilling to commit themselves to contracts for deliveries beyond three months. Only in a few instances, as in the case of the De Wendel works, are producers willing to book business for longer deliveries. On such protracted deliveries, works are demanding price increases, which they consider justified by the fact that the exact level of stabilization is not known. Present prices of French metallurgical products will probably undergo a slight advance if the franc is stabilized at 125 to 126 fr. to the pound sterling, as seems to be expected in some quarters.

Pig Iron.—No change in prices or general market conditions has developed. Negotiations for establishment of a syndicate to control hematite iron seem to have entered the final stage.

Semi-Finished Material.—The market is quiet, but prices are strong, with blooms at £4 11s. (\$22.16) per ton, compared with £4 10s. (\$21.92) per ton on June 1 and £4 5s. (\$20.60) per ton on May 1. The price on June 1, 1913, was, on the basis of the present value of the franc, £5 (\$24.35) per ton, f.o.b. Antwerp. Billet prices are £4 16s. (\$23.38) per ton, compared with £4 14s. (\$22.90) on June 1 and £4 10s. (\$21.92) per ton on May 1. The June 1, 1913, price was £5 6s. (\$25.81) per ton, f.o.b. Antwerp.

Finished Material.—The export price of steel bars seems to be stabilizing at £5 15s. to £5 16s. per metric ton (1.28c. to 1.29c. per lb.), f.o.b. Antwerp. The domestic market is active and some good orders are being booked from the French railroads, the French Navy and for export. Order books are well filled for three to five months, so that the stabilization of the franc is not expected to have a serious effect. The present price of bars, which has been fairly stable since June 1, compares with £5 5s. 6d. per ton (1.16c. per lb.) on May 1 and £5 10s. per ton (1.21c. per lb.) on June 1, 1913. Beams are quoted at £4 19s. per ton (1.09c. per lb.), which compares with £4 13s. 6d. per ton (1.02c. per lb.) on May 1 and £5 15s. per ton (1.28c. per lb.) on June 1, 1913.

Rails.—The current price is £6 10s. (\$31.6c) per ton, f.o.b. Antwerp, which compares with the pre-war price on June 1, 1913, of £6 (\$29.22) per ton, Antwerp. The State Railways of Yugoslavia have placed an order with the Central European Steel Syndicate for 30,000 tons of rails. This syndicate includes Austrian, Czechoslovakian and Hungarian steel works.

Rustless Iron for Decorations

The latest use found for rustless iron is for decorative purposes for buildings, exterior and interior. Lyons, Ltd., one of the largest caterers in the world, which makes a specialty of securing the most prominent corner sites in London, described as "corner houses," has just opened the latest of this group, which is known as the Oxford Corner House, situated at the corner of Oxford Street and Tottenham Court Road, London. The new restaurant, which is a particularly massive and handsome building, seating 1200 on one floor, has the whole of the metal enrichment on the entrance doors made of rustless iron. In addition all the fittings of the serving counters, show cases and cash desks, and the various window show fittings are made of the same material. It is also used in the kitchens for the serving and cutting up tables, hot plates, and many small ovens as well.

Cooperating in Canada's Steel and Power Show, Toronto, Sept. 4-7, are the following organizations: Montreal Chapter of the American Society for Steel Treating and the Canadian section of the American Welding Society.

Export Company All Inclusive

New Steel Association, Permissive Under Webb Act, Includes Practically 100 Per Cent of the Exporting Companies

PENDING an expected announcement from the Federal Trade Commission, no statements from steel companies are obtainable respecting the newly formed Steel Export Association of America, of which information was given in these columns June 21, page 1773. While the initiative was taken by the export subsidiaries of the Bethlehem Steel Corporation and the United States Steel Corporation, in the filing of papers covering the formation of the export combination under the provisions of the Webb-Pomerene act, it now appears that practically every sizable steel company doing any export steel business has joined the association. This means that every member company of the former Consolidated Steel Corporation, for example, is in the new organization, together with the United States Steel Products Co. and the Jones & Laughlin Steel Corporation, both of which have heretofore remained altogether independent. There is no understanding that all companies will not seek export outlets as before, but through the export association they may discuss and establish export prices as a single corporate entity. For all practical purposes the new arrangement is calculated to govern 100 per cent of the exports of rolled steel from the United States—and it naturally looks to increasing exports or making them properly profitable.

Some of the effects expected from the export association are these:

Foreign buyers, often working in a more or less tight organization, will have less opportunity than before, or perhaps none at all, of pitting one seller against another and thereby realizing prices below the world level.

Less extreme price cutting in the competition with European steel producers in so-called neutral markets, through the possibility of a wider and clearer understanding of prices and a conception that prices will not play an unduly large part in the closing of business.

A definition clearer than now obtained of areas, or

so-called spheres of influence, regarded as belonging primarily to the producers of one nation as against those of another.

It is assumed that Canadian business will not come under the purview of the Steel Export Association and also, as intimated, that the export departments of all the steel companies will maintain offices, here or abroad, as before. It is doubtful that the plans include any allocation of orders, on the score that the association is not likely to operate as an order-taking agency but chiefly as a price stabilizing agency.

Exporters and importers of iron and steel have pointed out that with the International Steel Cartel and the European Rail Makers' Association operating among Continental steel producers, a combination as inclusive of American steel production as the new association might work to limit imports of steel to this country.

The Consolidated Steel Corporation, as was mentioned in *THE IRON AGE* at the time of its disbandment, had been the largest and most important of the companies formed under the Webb Act for cooperation by American producers in the marketing of their products in foreign countries. It was incorporated Jan. 2, 1919, and went out of business in September, 1922. In its membership was the Bethlehem Steel Corporation, and the Lackawanna and Midvale Steel & Ordnance Co., both acquired by Bethlehem; the Youngstown Sheet & Tube Co. and the Brier Hill Steel Co. absorbed by Youngstown; the Republic Iron & Steel Co., and the Trumbull Steel Co., now a part of the Republic organization; the Lukens Steel Co., the Whitaker-Glessner Co., now of the Wheeling Steel Corporation, and the Sharon Steel Hoop Co., and it handled the export business of the Railway Steel Spring Co., the Standard Steel Works Co. and the Edgewater Steel Co.

RAILROAD EQUIPMENT

Erie Orders 900 Freight Cars—500 Gondolas Wanted for Export

The Erie Railroad has ordered 500 box cars and 400 automobile cars, leaving only 100 furniture cars to be purchased against its recent inquiry. Several foreign roads have issued inquiries for equipment in the American market, the largest being 500 gondola cars for the South African Railways. Details of the week's business follow:

South African Railways are inquiring for 500 20-ton, four-wheel gondola cars.

Erie Railroad has ordered 500 steel-sheathed, steel-framed box cars from Pressed Steel Car Co. and 400 automobile cars from Standard Steel Car Co. Action has not yet been taken on this road's inquiry for 100 furniture cars.

Chicago, St. Paul, Minneapolis & Omaha has ordered 250 stock cars from Pullman Car & Mfg. Corporation. This order was previously reported to unnamed bidder.

Missouri-Kansas-Texas has ordered 10 air-dump cars from Western Wheeled Scraper Co.

Chicago, Milwaukee, St. Paul & Pacific has purchased two 200-ton flat cars from Standard Steel Car Co.

Aluminum Co. of America has ordered two four-wheel switching locomotives from American Locomotive Co.

Canadian National is inquiring for three steel baggage and mail cars.

Union Pacific has made inquiry for four gas-electric rail motor cars and eight trailers.

Pittsburgh & Shawmut is inquiring for six caboose cars. Southern Pacific will build nine locomotive tenders at its Houston, Tex., shops.

Lehigh & New England has made inquiry for six caboose cars.

Manila Railroad, Manila, P. I., is inquiring for 100 30-ton box cars.

Pacific Electric has ordered 18 interurban cars and 10 passenger coaches from St. Louis Car Co. This road also plans to recondition 198 cars in its own shops.

Chicago Great Western will buy three baggage and mail cars.

Montevideo Post Administration, Montevideo, Uruguay, has made inquiry for 20 open-top cars.

Elk Horn-Piney Coal Mining Co. has purchased 150 mine cars from Enterprise Wheel & Mining Car Corporation.

Southern Pacific has purchased 10 street cars from St. Louis Car Co.

A. Milne & Co., with headquarters at 745 Washington Street, New York, have been appointed sole agents for the United States and Canada for the cutlery sheets, file steels and special sections made by S. & C. Wardlow, Ltd., Sheffield, England.

James B. Clow & Sons, Chicago, have acquired through purchase of a majority of the stock a controlling interest in the National Cast Iron Pipe Co., Birmingham.

CONTENTS

June 28, 1928

The Place of Overhead Conveyors	1805
Electrical Steel-Mill Development	1807
Magnets Control Welding Arc.....	1810
Uniformity in Duplex Steel	1812
How to Analyze an Export Market	1815
Refine Chrome Steel at Low Heat	1817
Largest Exports in Seven Years	1828

Corrosion of Iron and Steel Pipe.....	1806
Safety Improvement at Bethlehem Plants	1806
Armco Starts Using Hot Metal.....	1809
Uniformity in Malleable Castings.....	1811
Prizes for Foundry Apprentices.....	1811
Low-Manganese Plates for Shipbuilding	1813
What to Require in Foundry Coke....	1814
To Connect Connellsville With Pitts- burgh	1816
Another Diesel-Electric Towboat	1818
Youngstown Seeks River Outlet.....	1819
Expansion of Oliver Machinery Co....	1821
Plate Embrittled by Alkaline Water..	1825
Railroad Savings on Old Materials....	1829
Not Impervious to Caustic Embrittle- ment	1831
To Classify Coal by Character.....	1832
Rustless Iron for Decorations.....	1832
Steel Export Association.....	1833
To Build Bolt, Nut and Rivet Plant....	1839
Optimistic on Electrical Industry.....	1839
New Trade Publications.....	1869

STATISTICAL

Foundry Equipment Orders Much Higher	1821
More Coke Produced in May.....	1824
Fabricated Steel Plate Orders.....	1825
Employment High in Ohio.....	1825
Further Gain in Steel Barrel Output..	1829
Orders for Commercial Steel Castings.	1832
Large Automobile Output	1839
Canadian Iron and Steel Output.....	1861

NEW EQUIPMENT

New Line of Power Presses.....	1820
Norton Cylindrical Grinder	1822
Gasoline-Driven Swing Crane	1822
Nibbling Machine for Slotting Tubes..	1823
Resistor and Transformer Fuse.....	1823
Portable Pneumatic Press.....	1823
Self-Alining Hangers	1823
Gear Reduction Unit and Chain Drive.	1824
Unusually Large Electric Shovel.....	1824
Measuring Tape Hook for One Man...	1825
Cord-Grip Plug Cap.....	1825
Recorder and Contacting Controller....	1825

MEETINGS

American Foundrymen's Convention..	1814
National Foreign Trade Council.....	1815
Screw and Thread Commission.....	1818
Institute of Metals (British).....	1818
National Distribution Conference	1839

DEPARTMENTS

Book Reviews	1826
European Steel Markets.....	1830
Railroad Equipment Buying.....	1833
Editorial	1836
Iron and Steel Markets.....	1840
Comparison of Prices.....	1841
Prices, Raw and Finished Products.	1843-1845
Non-Ferrous Metals	1857
Reinforcing Steel Business.....	1858
Structural Awards and Projects.....	1858
Personals	1860
Obituary	1861
Machinery Markets	1863

This Issue in Brief

Cut costs and save valuable floor space by utilizing overhead space as a storage carrier. Overhead conveyors, supplemented with trucks, are reducing the large amount American industry pays for material handling.—Page 1805.

Welds of superior strength and appearance are produced at high speed by use of "electronic tornado" carbon arc. Superimposing a strong magnetic field on the arc appears to give the arc a gyratory motion and controls the arc, says welding machine manufacturer.—Page 1810.

Duplexing steel is beset with difficulties owing to the unstable and varying factors of each charge. Valuable results would be gained by finding a working relationship between the different slags and the intensity of the reaction when raw iron is charged.—Page 1812.

Cuts Cost 10 per cent by using high-tensile, low-manganese plate for shipbuilding, in place of mild steel. The high strength of 1.25 per cent manganese steel permits a reduction in weight with no sacrifice of strength. British Navy now uses it for all important hull members.—Page 1813.

Good foundry coke should not exceed 2 per cent in volatile matter. Fixed carbon should be at least 86 per cent; ash should be 12 per cent or less, and sulphur not over 1 per cent, says member of A. S. T. M. committee on coke specifications.—Page 1814.

Go after foreign business if your product is exportable, but first make a thorough study of the market. Purchasing power, local competition, patents and advertising are points to be investigated. The Department of Commerce can give invaluable aid.—Page 1815.

Residual chromium in open-hearth steel bears no relation to the chromium contained in the scrap charged, metallurgist declares. The amount of chromium remaining in the refined steel depends entirely on the method of melting and the bath temperature during refining.—Page 1818.

Railroads fight proposal to connect Youngstown to Ohio River by means of railroad extension. They declare the move is an attack on the rate structure. Youngstown steel makers say that their land-locked position handicaps them in competition with other producers. Getting the benefit of low-cost river transportation is essential to their prosperity, they assert.—Page 1819.

Sharp gain in steel exports. In May 171,474 gross tons of finished steel left the country, a gain of 25 per cent over April and 12 per cent over May, 1927. Shipments for first five months now equal exports for same period of last year.—Page 1828.

Investigation is unsuccessful in correlating pipe corrosion with chemical and physical characteristics of soil. In some soils the pipe is practically free from corrosion, while in others serious corrosion results in a short time.—Page 1806.

Determines proportional limit of steel quickly, yet accurately, by check-test. To insure absence of slipping of the grips of extensometer when lower reading is taken, a load of 4500 lb. per sq. in. is put on and a reading taken. Then load is gradually increased to 38,000 lb. per sq. in. and a second reading is taken. Finally the load is reduced to 4500 lb. and a third reading taken. The last figure must not exceed the original figure by more than 0.0004 in.—Page 1813.

American boiler plate is just as good as new German steel for use with alkaline waters. "Izett," a new Krupp product, is said to show no aging effects after cold work, but tests reveal that it is no more impervious to caustic embrittlement than is American boiler plate.—Page 1831.

Makes double welds at rate of 40 ft. an hour for each head, using controlled arc. Electrode holders cross each other at a sharp angle, without blowing out either flame. Cost of welding $\frac{1}{2}$ -in. plates ranges from 3c. to 7c. a ft.—Page 1811.

To keep down repair costs on overhead conveyors see that erecting is done with extreme accuracy. Straight runs of I-beams must be absolutely straight, and at the roller turns the center line of the web of the beam should be exactly vertical with the center line of the chain.—Page 1806.

Nine hundred per cent gain in motor-driven rolling mill main drives in past eight years. In 1920 there were 157 motor-driven main drives, and now there are over 1500.—Page 1807.

Workers who absent themselves without sufficient reason do not hold jobs. The operator of a costly machine who takes a day off to go fishing, and thereby forces his machine to stand idle, is fast passing, for workers who do not report for work are called to strict account. The result is a much better attendance record than prevailed in the past.—Page 1838.

New May record for automotive vehicle production was established last month. The total number of vehicles made in the United States was 425,990.—Page 1839.

ESTABLISHED 1855

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Sheet Mill Vitality

WITH the successful advent of the continuous mill for rolling strips to sheet mill widths, the suggestion was frequent about a year ago that the days of the old type sheet mill were numbered. Since sheets would be produced in the new mill at a large saving the hint was rather generally given that stockholders in companies operating the old type mills would show wisdom by selling out before the asset became a liability. But a year has gone by without the scrapping of any of the old type mills; the statistics of operation have shown a need for a large percentage of them, and while there have been one or two consolidations there are just as many sheet mill units now as twelve months ago. Moreover, obsolescence of the old type mill appears now to be somewhat remote.

It is interesting to look into the causes. Various sheet producers in adopting the continuous mill did so not with an idea of using it to make a finished product, but as a means of doing the work preliminary to finishing in a more rapid and economical way. At a meeting of the iron and steel division of the American Society of Mechanical Engineers held in Youngstown, Ohio, last November the continuous and four-high mills were freely discussed and the suggestion came out that, as there are many products which must have a finish and a thinness beyond what the mechanically operated mill can give, there is good reason for the retention of the hand-operated mill to perform the exacting finishing operations. To make the old mill supplement the new, moreover, would solve the financial problem that would have developed from the forced scrapping of the older mills.

Quite significant is the taking up of the idea of supplementary operation, as indicated in the announcement of one company that is building a wide strip mill and of another that has such a mill in operation, that a considerable part of the production of these mills will be marketed as strip mill breakdowns rather than as finished sheets or strips. The decision indicates a realization that, with two wide strip mill installations already in operation, with a monthly capacity of 30,000 tons, another with

25,000 tons and one building with 30,000 tons or more, to say nothing of the mill operating at Ashland and the one in the St. Louis district, the market is not broad enough to absorb profitably the product of these mills fully finished. Marketing of strip mill breakdowns means a narrowing of the demand for sheet bars, but probably a reduction in the cost of making finished sheets and black plate, so that eventually costs for strips and sheets will be much nearer parity.

Incidentally, and quite apart from these considerations, some sheet makers have been busy on their own account in finding methods calculated to lengthen the tenure of the pack-rolling mill. One interesting plan now in the making is the application of tin mill methods to sheet mill practice through the working of two mills as a unit and the use of continuous heating furnaces for sheet packs.

Call It by Its Right Name

AN attractive booklet comes from a manufacturing company, describing a new product. It says that after more than a dozen years of research a new alloy has been achieved, which has unusual properties of wear resistance, machinability, strength and toughness.

We do not doubt that such material as is described will give excellent service in many places, as the makers recommend, such as cams, brake drums, pistons, cylinders and dies, for the microscopic views contained in the booklet show that the product is a pearlitic cast iron—it contains rather short, discontinuous graphite flakes, in a matrix of sorbite and pearlite. The physical properties quoted (ultimate strength and yield point in tension both 35,000 lb. per sq. in.) are about what would be expected from a gray cast iron with 1.0 per cent combined carbon.

But what should be vigorously protested against is the makers' determination to call such material *steel*. The microscope shows it is not steel. It has excess carbon as graphite, and it is not malleable. It does not therefore correspond to the essential characteristics of steel, for steel is a malleable alloy

of iron and iron carbide. A non-malleable alloy of iron, iron carbide and graphite cannot be a steel.

We believe the makers would do well to revise their publicity. To those prospective customers who may be influenced by scientific terms which they do not understand, "pearlitic cast iron" would be just as impressive as any name that includes the word "steel," even though preceded by a restrictive adjective. And among the other customers is a large and growing number of metallurgists who know the difference between cast iron and steel and who might be disposed to discount any statement of properties ascribed to a misnamed material.

New Thought in Stock Operations

CRITICISM has been passed of late on what has happened in the stock market itself and on the course of business men, alleged to be unduly interested in stock speculation to the detriment of their commercial affairs. One cannot but notice that the critics judge these matters of the stock market by old standards or traditions. Indeed they usually emphasize this, saying that collapses invariably did come. The question arises whether there have not been changes in respect to speculation and investment, comparable with those in industry, that call for new judgments of the securities market.

Suppose we apply old ideas to present practices in commerce. Here we have a manufacturer with a very limited inventory of raw materials. He used to carry much larger stocks and yet sometimes get caught with an insufficient supply. Is he not in danger? Or another manufacturer, with a small stock of finished product. There may be a sudden rush of demand, as there used to be in the good old days, and then he is going to lose customers to competitors.

To such suggestions the ready and sufficient answer is that times have changed. Orders for raw materials can be placed easily and transportation is prompt. The seller knows his customers' requirements within close limits and is assured that customers will not take sudden notions to purchase more than they need.

We see a cumulative increase in negotiable securities. Also we have an increase in population, an increase in physical assets per capita, and an increase in the proportion of the total assets that is represented by negotiable securities. There is a double increase in the supply of capital at a given moment; the total amount of capital has increased and at the same time there is an increase in mobility. Thus it is natural that the volume of share trading should be greater. The ticker's falling behind is not a measure of excessive trading. The ticker was made for stocks, not stocks for the ticker.

In the last five years this country has grown much more mentally than it has physically, great as the growth has been there. With increased information and better judgment trade depressions have been avoided which by old standards should have come. Already there has been some readjustment in the stock market and of an orderly character. The volume of brokers' loans, so much questioned, was reduced nearly \$300,000,000 in a fortnight. Estimates of the reduction desired by the Federal Reserve management range between a half billion and a billion. When the inception of liqui-

dation produced no great disturbance, further progress should not. No one can predict the final outcome, but when it is all over it is likely to be seen that the business or art of share trading has made progress in recent years as has been the case with so many lines of human activity.

Steady Automobile Production

LAST month's automobile production made a new high record for the month of May, production of passenger cars and trucks in the United States and Canada being 459,932, against 429,823 in 1927 and 446,118 in 1926. Even five years ago May showed 412,527. This month's production may be forecast at 450,000, with a small probable error.

A discussion in this department of THE IRON AGE of April 26 showed that large gains in automobile production disappeared quite a while ago and that not much deficit in supply, relative to general demand, accumulated last year. Now we can compare figures for periods three months later and they make the showing even more pronounced. It seems likely that for a time the best pair of calendar years will remain 1925-6 and the best twenty-four-month period that through March, 1927, just before the disappearance of the Ford model T.

For light on the probable future, the best use of the latest statistics is to set up twelve-month totals through June, as shown below, and calendar year totals are given in a separate column for comparison:

Production of Passenger Cars and Trucks, United States and Canada

	Twelve Months Through	
	June 30	Dec. 31
1922.....	.....	2,639,373
1923.....	3,572,658	4,166,693
1924.....	4,149,840	3,736,164
1925.....	3,876,106	4,427,093
1926.....	4,669,608	4,503,352
1927.....	4,215,046	3,573,185
1928.....	3,729,715	.....

Thus the best calendar year was 1926, ended a year and a half ago, while the best twelve-month through June ended two years ago. The best first half production was in 1926, two full years ago, while the best second half production was in 1925, two and a half years ago. The best twenty-four consecutive months ended March 31, 1927, a year and a quarter ago.

For the calendar year 1928 to pass 1926 a second half production of 2,150,000 is required, which would be 8 to 9 per cent under the first half production, whereas usually there is a much greater decrease. Such production may easily occur, but 1927-8 combined would still be under 1925-6.

What interests the steel trade is this, that it cannot expect a measurably larger tonnage outlet into the automobile industry in future than it had two and three years ago; yet it can expect a steadier monthly demand, therefore less pressure in spells to ship a large tonnage and likewise less question about prices in the off periods of demand.

ONE measure of the sounder condition of the British steel industry this year is a marked shrinkage in imports of iron and steel. In 1927 over 4,406,400 gross tons, or 367,200 tons per month, went into British ports—an amount never before equalled. The imports even exceeded the exports. To May 1, this year, imports averaged

276,200 tons per month, a decline of about 25 per cent. The falling off has been chiefly in semi-finished steel and in pig iron, though in most finished products the movement has been distinctly less. Leaders in the British industry have done well in thus checking the inrolling wave of cheap iron and steel from the Continent; but it is evident that much must be done in the removal of labor union restrictions if British steel is to regain its former place either at home or abroad.

The Day of the Financial Engineer

EVOLUTION in engineering societies has been an example of multiplication by division. Military engineering split off the civil section, which in turn parted to form the mechanical branch. From the latter was cleaved the electrical. More recently, new engineering branches have been formed by derivation from two parents. When chemistry began to require manufacturing equipment, the chemical engineering profession had its rise. Efficiency in industrial production invited the development of industrial engineers. Now, the increasing importance of finance in industrial organization seems to require the training of a new branch, that of financial engineers.

From the financial point of view, industrial operations present various aspects. Some are "bankable," meaning that they require the use of money for a definite short time, to be repaid by the proceeds of notes or contracts, and meanwhile are secured against failure to pay by the borrower's ownership of quick assets in the form of accounts and salable goods. Others are not "bankable," regardless of the various degrees of risk that may be involved. If permanent assets are or will be available as security, such as profit-making structures and equipment, with production and distribution systems of known effectiveness, such propositions may be acceptable to investment houses and in some cases even to trust companies.

Only practically experienced men are in position to appraise correctly the character of product and of the average purchasers, and therefore the probable percentage of accounts receivable which will be promptly and fully paid; also the value of factory inventories and their salability when considered as quick assets. Without the support of such information, the banker can only divide the borrower's book figures by two or some other arbitrary figure, and trust to his good character and presumed ability to redeem his promises. In the investment class, it takes the experienced engineer to decide whether producing equipment is the latest and to judge whether methods, men and management are capable of effective competition at continued profit. On the other hand many engineers are not qualified to determine the amounts needed for permanent and temporary financing, to forecast market changes and adjust operations to meet them successfully, and to distinguish between the ordinary and expected hazards of business and the extraordinary uncertainties which may upset all expectations, in producing a novel and untried device or opening a market among a new class of purchasers.

Financial men and engineers alike must take unknown chances when dealing with affairs which lie outside of their particular experience. Financial

engineers, with education and training also in sound investment, banking and accounting practice, and with experience in manufacturing and industrial management, can give useful service to banks, investment houses and industrial operators and promoters. The advice of engineers with such a combination of abilities is helping greatly in the development of useful new industries and products, and preventing the loss of banking and investment funds in ill-planned industrial projects, and in prolonging the use of obsolescent equipment and inadequate methods of production and marketing.

Absenteeism on the Decrease

IN well-managed American manufacturing plants the number of absentee employees has decreased to a marked extent in the past few years. To take the experience of one large metal-working company, whereas formerly 7 per cent of the working force was absent as an average, now 3 per cent is considered normal. The effect upon manufacturing costs is easy to see. Overhead is lowered, general efficiency is raised. The industrial machine operates more smoothly and with greater productivity.

Three per cent of absenteeism is evidently not the low limit, as is demonstrated by some recent records which are illuminating in the possibilities they suggest, for they run well under 1 per cent. One plant employing 1500 men operated one month with only 96 days of absenteeism from all causes, which was the equivalent of four men out for the whole month. In another establishment employing 2300 men, absenteeism totaled 226 days, or the equivalent of nine men out for the month. In still another case, where 500 men were employed, in three months absenteeism totaled 35 days, an average of 12 days a month, and the equivalent of only one man out for less than one-half of the three months' period. These examples are extreme, of course, and it is not likely that such records could be maintained year in and year out. Yet they illustrate the new trend that is the result of several causes, one of the most important of which, no doubt, is the increased desire of workers to avail themselves of all possible money-earning employment.

Absenteeism divides into two classes, the avoidable and the unavoidable. There will always be some people out of a plant because of illness, accident, bereavement and like causes. The factors of sickness and injury have decreased steadily under modern shop conditions. Wholesome surroundings are a preventive of first-class importance. Most effective also is the work of the shop physician, whose treatment in the earliest stages of sickness reduces materially the number of cases of so serious a nature as to compel idleness. Also, the campaign for accident prevention and the compulsory treatment of the most trivial injuries have resulted in a great decrease of disabling, otherwise termed lost-time, accidents. A metal-working plant employing 5000 men reduced the number of disabling accidents from 129 in 1920 to 51 in 1927, and the expectation is that the number will go even lower this year.

But the major part of the reduction in absenteeism in recent years has been in the avoidable class.

In the past a certain number of employees felt free to take a day or two off now and then to attend to their private affairs, of business or pleasure. The day of making garden or going fishing in employment hours has passed. Discipline has tightened up. Workers who do not report for work are called to strict account. Once it was not

uncommon for a man who operated a costly machine to stay out for a day's pleasure and let the machine stand idle. Nowadays in such a case the idler is informed that the machine must be kept going, and if he is not to be depended upon some one else will be found who will take the task seriously.

LARGE AUTOMOBILE OUTPUT

May Showed Greatest Total Since August, 1925 —Only 4 Per Cent Behind Record

WASHINGTON, June 25.—Production of motor vehicles in the United States during May totaled 425,990, of which 375,798 were passenger cars and 50,192 were trucks, according to reports received by the Department of Commerce from 157 manufacturers. This was the sixth largest month's production on record, having been exceeded only by March, April and August, 1926, and April and October, 1925; the last-named, the record, provided 442,114 vehicles. Output in April totaled 410,189 units, of which 364,877 were passenger cars and 45,312 trucks.

For the five months ended with May the total production was 1,805,060, of which 1,609,223 were passenger cars and 195,837 were trucks. This compares with a production of 1,747,007 during the corresponding period of 1927, the passenger car output being 1,523,891 and that of trucks 223,116.

Canada Makes New Record

Canadian production of motor vehicles in May totaled 33,942, of which 29,764 were passenger cars and 4,178 were trucks, comparing with a production of 24,240 in April, of which 20,546 were passenger cars and 3,694 were trucks. May provided by a wide margin a new high record for Canadian output; the largest previous total in any month was 25,708, in May, 1927. For the first five months Canadian production totaled 96,627, of which 82,562 were passenger cars and 14,065 were trucks. For the corresponding period of last year Canadian production totaled 106,973 units, of which 88,541 were passenger cars and 18,432 were trucks.

Iron and Steel Scrap Association of Chicago

The Iron and Steel Scrap Association, Chicago, has elected the following officers: President, Morton Teller, Teller Iron Co.; first vice-president, Walter Bregman, Price Iron & Steel Co.; second vice-president, E. G. Howell, Erman, Howell & Co., and treasurer, R. L. Jeffrey, R. L. Jeffrey Co. The directors are Ben Colitz, B. Kaplin, D. R. Cohen, Frank Parker, Sam Posen, M. Patinkin and W. Ross.

Pacific Coast Steel Co. to Build Bolt, Nut and Rivet Plant

The Pacific Coast Steel Co., San Francisco, will begin work immediately on a new bolt, nut and rivet and specialty forging plant which will adjoin its steel plant at South San Francisco. Decision to build the plant came as a result of a study of market conditions in the Bay region of California which has been made by the Pacific Coast company in conjunction with the industrial engineers of the San Francisco Chamber of Commerce.

The plant will represent an investment of \$600,000 and is expected to start operating in the fall of the present year. The manufacturing department will be housed in a steel building 450 ft. x 100 ft., part of which will be three stories high. The machine shop and electric tool heating department will be 150 ft. x 80 ft. A full line of standard bolt products will be manufactured and the line of specialty forgings will be cared for as the market develops. The steel con-

sumed by the local plant in the manufacture of its products will be made in the Pacific Coast company's mills in San Francisco. Storage and shipping space will total 20,000 sq. ft., and a minimum of 2000 tons of finished product can be carried at all times. Because of good rail connections the company will make 24-hr. deliveries to San Francisco Bay points in carload lots, and a truck delivery of 30 min. or less will be maintained for less than carload lots.

John Stetter, who recently owned and operated the Muncie Cap & Set Screw Co., Muncie, Ind., manufacturer of bolt products for automobiles, gas engines and other machines, will supervise and direct operations in the new plant. He has also been connected in a consulting capacity with the Southern California Iron & Steel Co., Los Angeles, which is affiliated with the Pacific Coast Steel Co.

National Distribution Conference in New York

Charles M. Schwab will speak at the Thursday morning session of the National Distribution Conference, which will be held at the Waldorf-Astoria, New York, June 28 and 29. As has been indicated in these columns, the conference is under the auspices of the bolt, nut and rivet industry and has been widely promoted by Charles J. Graham, president of the Bolt, Nut and Rivet Manufacturers' Association. At the opening of the Thursday morning session Mr. Graham will give a brief history of the association and an outline of its distribution plan.

The Thursday afternoon session will be devoted to a general discussion by various manufacturing and distributing interests represented at the conference. The aim is to develop sentiment and lead to action that will tend to correct conditions that have long been complained of in the selling of iron and steel and secondary products.

At the dinner Thursday evening there will be an address on "The Era of Efficiency" by James Francis Burke, general counsel of the Bolt, Nut and Rivet Manufacturers' Association, and Magnus W. Alexander, president National Industrial Conference Board, will discuss "Production, Distribution and Social Progress." On the program of Friday is an address by Col. William J. Donovan, acting attorney general of the United States, on "The Relation of Government to Business," and one by Gilbert H. Montague, general counsel of the National Welded Chain Association of the United States, on "Recent Steps in Business Self-Government."

Optimistic on Electrical Industry

Stockholders of the Westinghouse Electric & Mfg. Co. have ratified a change in the fiscal year of the company, to make it conform with the calendar year. Discussing business conditions, President E. M. Herr said they had not changed materially in the past several months. "There is perhaps at present a slight drop in volume," he said, "but this is offset by indications that, as soon as the Presidential nominating conventions are over, the volume will increase."

"I look for a rather good business year, not materially better than last year, but with a sufficient improvement in view to warrant confidence. The electrical industry is in a most fortunate position, for we have a continuous development which ever broadens its field of usefulness. These new fields of usefulness create new electrical markets and so continue the steady growth of the industry, at times when business in staple products may be slightly under normal."

Iron and Steel Markets

Steel Output Gains at Pittsburgh

Third Quarter Advance on Plates, Shapes and Bars Stimulates
Specifying—Steel Consumption Well Maintained—Price Situation Irregular

STEEL consumption, which is no longer easily measured in view of the growth of miscellaneous uses for mill products, is holding up better than had been expected. As a rule, both specifications and new orders call for quick delivery, indicating that steel is being placed for actual requirements and not for stock, and total mill bookings bulk large. In the Greater Pittsburgh area, in fact, output has increased to 72 per cent of ingot capacity, compared with 70 per cent last week. Operations in the Chicago district, on the other hand, have declined three points to an 80 per cent rate.

The improvement at Pittsburgh is attributed, in part, to heavier specifying against second quarter contracts, particularly those covering plates, shapes and bars. On those products mills are making a more determined effort to establish a price of 1.90c., Pittsburgh, for the coming quarter, and, while some buyers regard this move as a defensive one, primarily intended to hold the market at the present level of 1.85c., others are taking the precaution to release the steel still due them.

The volume of mill bookings and the rate of production leave but little to be desired, considering the season. Operations at Chicago and Pittsburgh are from five to seven points higher than a year ago.

The price situation, however, is not so favorable. In contrast with the advanced quotations on plates, shapes and bars, prices on cold-drawn bars have been reduced \$2 a ton and sheets have shown further weakness. Black sheets at 2.65c., Pittsburgh, and galvanized sheets at 3.50c., which is now the maximum rather than the minimum going price, are at the lowest levels since March, 1916.

At Cleveland, third quarter business in cold-rolled strip has been taken at a concession of \$2 a ton, and the final abandonment of efforts to advance hot-rolled strip is seen in the acceptance of forward commitments at the same prices that ruled on second quarter contracts.

In semi-finished and primary materials the price trend is irregular. Basic pig iron in the Valleys has rebounded after dipping to \$15.37 a ton, furnace, having advanced to \$15.75 on a sale of 2500 tons. Alabama and Tennessee foundry iron, on the other hand, have again declined to \$15.50, Birmingham, after an advance to \$16 late in May.

Scrap prices are weak in all markets, and heavy

melting steel at Pittsburgh has receded 25c. a ton for the second time in two weeks, now being at the lowest level since early in 1922.

In semi-finished steel the re-establishment of base-size billets at \$33, Pittsburgh, or \$1 a ton above recent prices, is now a possibility, but sheet bars, under the threat of competition from strip mill breakdowns, have been sold at \$32, Youngstown, a drop of \$1 a ton.

Among the major outlets for steel, building is the most active. Of 38,200 tons of fabricated steel work placed in the week, 12,000 tons was for a New York hotel. In Greater New York alone large projects likely to be placed during the summer total more than 100,000 tons, of which 20,000 tons is for a Brooklyn department store.

Tin plate mills are booked for 45 to 60 days, following generous specifications from can manufacturers.

Some of the Michigan automobile builders have sharply curtailed production and others have shut down for inventories and changes in models. Steel orders from the automobile industry have declined, but the demand for sheets and strip steel from that source is still large for this season.

Automobile production in May was 425,990 units, the sixth greatest total for any month and less than 4 per cent below the record of 442,114 established in October, 1925.

The new steel export association includes nearly, if not all, of the producing companies interested in exporting, and aims in part to secure export price stabilization, to combat foreign cooperative buying and, indirectly, to develop favorable areas for exports and at the same time to strengthen world price levels.

Exports of iron and steel in May were 267,890 gross tons—the largest total since February, 1921.

Reaching the lowest level since 1915, the pig iron composite price of THE IRON AGE has dropped to \$17.21 a ton, from \$17.23 held for the three preceding weeks. It is now just \$1.50 lower than a year ago. The finished steel composite remains at 2.341c. a lb. for the fourth week, against 2.367c. a year ago.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

Pig Iron, Per Gross Ton:	Jun.26, 1928	Jun.19, 1928	May 28, 1928	Jun.28, 1927
No. 2, fdy., Philadelphia...	\$20.75	\$20.75	\$20.75	\$21.25
No. 2, Valley furnace....	16.75	16.75	17.00	18.00
No. 2, Southern, Cin'tl....	19.19	19.69	19.69	21.69
No. 2, Birmingham.....	15.50	16.00	16.00	18.00
No. 2 foundry, Chicago*...	18.00	18.00	18.00	20.00
Basic, del'd eastern Pa....	19.00	19.00	19.00	20.75
Basic, Valley furnace....	15.75	15.35	16.00	17.50
Valley Bessemer, del'd P'gh	18.76	18.76	18.76	20.26
Malleable, Chicago*.....	18.00	18.00	18.00	20.00
Malleable, Valley.....	17.00	17.00	17.25	18.00
Gray forge, Pittsburgh...	18.01	18.01	18.26	19.26
L. S. charcoal, Chicago...	27.04	27.04	27.04	27.04
Ferromanganese, furnace.	105.00	105.00	105.00	90.00

Rails, Billets, etc., Per Gross Ton:	Jun.26, 1928	Jun.19, 1928	May 28, 1928	Jun.28, 1927
O.-h. rails, heavy, at mill.	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.00
Bess. billets, Pittsburgh...	32.00	32.00	33.00	33.00
O.-h. billets, Pittsburgh...	32.00	32.00	33.00	33.00
O.-h. sheet bars, P'gh....	33.00	33.00	34.00	33.50
Forging billets, P'gh....	38.00	38.00	38.00	39.00
O.-h. billets, Phila.....	38.30	38.30	38.30	38.30
Wire rods, Pittsburgh....	42.00	42.00	44.00	42.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.85	1.85	1.85	1.80

Finished Iron and Steel,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.12	2.12	2.12	2.12	
Iron bars, Chicago.....	2.00	2.00	2.00	2.00	
Steel bars, Pittsburgh...	1.85	1.85	1.85	1.80	
Steel bars, Chicago.....	2.00	2.00	2.00	2.00	
Steel bars, New York....	2.19	2.19	2.19	2.14	
Tank plates, Pittsburgh...	1.85	1.85	1.85	1.80	
Tank plates, Chicago....	2.00	2.00	2.00	2.00	
Tank plates, New York...	2.17½	2.17½	2.17½	2.09	
Beams, Pittsburgh.....	1.85	1.85	1.85	1.80	
Beams, Chicago.....	2.00	2.00	2.00	2.00	
Beams, New York.....	2.14½	2.14½	2.14½	2.04	
Steel hoops, Pittsburgh...	2.20	2.20	2.20	2.30	

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Jun.26, 1928	Jun.19, 1928	May 28, 1928	Jun.28, 1927
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	2.65	2.65	2.70	3.00
Sheets, black, No. 24, Chi-				
cago dist. mill.....	2.75	2.75	2.80	3.10
Sheets, galv., No. 24, P'gh	3.50	3.50	3.55	3.85
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	3.60	3.60	3.70	3.95
Sheets, blue, 9 & 10, P'gh	2.00	2.00	2.00	2.25
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.10	2.10	2.15	2.35
Wire nails, Pittsburgh...	2.55	2.55	2.55	2.50
Wire nails, Chicago dist.				
mill.....	2.60	2.60	2.70	2.55
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.40
Plain wire, Chicago dist.				
mill.....	2.55	2.55	2.55	2.45
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.20
Barbed wire, galv., Chi-				
cago dist. mill.....	3.40	3.40	3.40	3.25
Tin plate, 100 lb. box. P'gh	\$5.25	\$5.25	\$5.25	\$5.50

Old Material, Per Gross Ton:	Jun.26, 1928	Jun.19, 1928	May 28, 1928	Jun.28, 1927
Heavy melting steel, P'gh.	\$14.25	\$14.50	\$15.00	\$14.75
Heavy melting steel, Phila.	13.00	13.50	13.50	14.00
Heavy melting steel, Ch'go	12.50	12.50	12.75	12.00
Carwheels, Chicago.....	13.00	13.00	13.25	13.50
Carwheels, Philadelphia...	15.50	15.50	15.50	15.00
No. 1 cast, Pittsburgh...	14.25	14.25	14.50	15.00
No. 1 cast, Philadelphia...	16.00	16.00	16.00	16.00
No. 1 cast, Ch'go (net ton)	13.50	14.00	14.00	14.50
No. 1 RR. wrot, Phila....	13.50	13.50	15.00	16.00
No. 1 RR. wrot, Ch'go (net)	11.00	11.25	11.50	11.00

Coke, Connellsville, Per Net Ton at Oven:	Jun.26, 1928	Jun.19, 1928	May 28, 1928	Jun.28, 1927
Furnace coke, prompt....	\$2.60	\$2.60	\$2.60	\$3.00
Foundry coke, prompt....	3.75	3.75	3.75	4.00

Metals,	Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.87½	14.87½	14.87½	12.62½	
Electrolytic copper, refinery	14.50	14.50	14.50	12.37½	
Zinc, St. Louis.....	6.15	6.15	6.12½	6.22½	
Zinc, New York.....	6.50	6.50	6.47½	6.57½	
Lead, St. Louis.....	6.15	6.15	6.07½	6.15	
Lead, New York.....	6.30	6.30	6.20	6.40	
Tin (Strait), New York...	46.25	46.62½	51.00	66.00	
Antimony (Asiatic), N. Y.	9.62½	9.62½	11.00	12.25	

Pittsburgh

Higher Production, Price Uncertainty, Basic Iron Rally and Weak Scrap

PITTSBURGH, June 26.—Steel ingot production in this and nearby districts averages a point or two higher than it did a week ago, in keeping with the fact that total orders for finished products have shown a moderate upturn in the past week. The hot-rolled products have made a notable good showing in point of releases by consumers. Little fault is found with the size of the aggregate specification in sheets, and tin plate is being ordered freely enough to lead some makers to defer promises of delivery against new business to the middle of August, or the first part of September. Specifications for strips and other steel products going into motor cars are holding up in surprising fashion.

It is evident from the developments of the week that consumption of steel has not decreased as much or as rapidly as it has in the past five years at this particular time, or as manufacturers had expected it to, drawing conclusions from the experiences of those years. Orders and specifications individually have been of moderate size, but they have been numerous and calling for such quick delivery as to create the impression that they represented actual requirements. Both orders and mill operations average higher than at this time last year.

The picture, however, is not such a happy one on the side of prices. Not much stability yet has developed

in strips or sheets, while a reduction of \$2 a ton in cold-finished steel bars is disturbing. It has created a rather awkward situation for makers of hot-rolled bars, who have been making some effort to establish an advance of \$1 a ton on third-quarter contract tonnages. These quarters no longer begin in January, April, July and October, but one month later, since buyers have until the end of the calendar quarter to specify, and by taking advantage of that condition can secure shipments for a month's needs. This is taken to be an explanation of the absence at this time of much of a drive for third-quarter contracts.

Prices of semi-finished steel are very indefinite, but there are signs of formal third-quarter prices that will place billets and slabs at a premium over sheet bars, reversing the usual price order.

There has been a rally in basic iron since a week ago, the break in which had an effect upon steel prices and has made steel companies a little less eager to sell. The market has dropped another 25c. a ton on heavy melting steel scrap and still shows a sagging tendency. Despite some consumer interest, that grade has been sold at \$14.50, but also has been refused at that price, which is the lowest level reached since the early part of 1922, when the recovery from the depression of the year before was beginning to get under way.

Pig Iron.—The market has recovered some of its recent decline in basic grade, which on a lot of 2500 tons went to \$15.75, Valley furnace, as compared with \$15.37, the price done on the last previous sale of Valley basic iron. There were only a few bidders for this 2500-ton lot, as the specification called for extremely

low sulphur content, and the quotation of the unsuccessful bidders was \$16, Valley furnace. It is believed the 10,000 tons of basic inquired for recently by a Wheeling district sheet maker has been bought, and that it will be supplied by other steel companies having comparatively low freight charges to destinations. The National Malleable & Steel Casting Co., Sharon, Pa., is inquiring for a round lot of basic iron. The market is distinctly firmer on this grade, because the effect of the recent break upon the steel market was bad and there seems to be a little less anxiety on the part of steel companies with surplus supplies to market them. Not much activity is noted in other grades, although a fair-sized aggregate tonnage of foundry iron is moving. In this grade \$16.75, Valley furnace, for No. 2 grade has become the top price, and while no less is being done in the Pittsburgh market, that price has been shaded by as much as 25c. on shipments beyond this district. Malleable and Bessemer iron continue to move at \$17, Valley furnace.

Prices per gross ton, f.o.b. Valley furnace:

Basic	\$15.75 to \$16.00
Bessemer	17.00
Gray forge	16.25 to 16.50
No. 2 foundry	16.75
No. 3 foundry	16.25 to 16.50
Malleable	17.00
Low phosphorus, copper free....	26.50

Freight rate to the Pittsburgh or Cleveland district, \$1.76.

Ferroalloys.—Although steel works operations are lower than a month ago, specifications on contracts for ferromanganese remain heavy, presumably because of a desire by consumers to defer paying the last half price, which is \$5 a ton above the first half price. Users also are specifying well against contracts for the other commonly used ferroalloys. New business is light.

Refractories.—There is not enough business in clay fire and silica brick to give manufacturers an operation of as much as 50 per cent of their capacity. Actual consumption of refractories is probably as high as it ever has been, but instead of stocking as they did formerly, producers of iron and steel now wait until there is a need before buying. Blast furnace linings are being placed steadily enough and there is a steady movement of silica brick to the steel works, but productive capacity is large and satisfactory operation is made difficult by the hand-to-mouth character of the demand. The product is giving longer service than it did a few years ago and that also tends to make purchases less frequent. There is some shading of prices of silica brick, but, in general, prices are holding well at levels of the past several months.

Bars, Plates and Shapes.—There has been some quickening in the releases against second-quarter contracts and the past week's business has been satisfactory to makers in this district. Ordinarily, the specifications increase in the last week or ten days of each month to cover the requirements of the early part of the ensuing month, but recent improvement seems to be due in no small measure to a more earnest effort by the mills to establish 1.90c. as the third-quarter contract price. It is a little discomfoting to makers of hot-rolled bars that the price of cold-finished bars has

weakened at this particular time, since producers of the latter, accounting for no small part of the hot-rolled bars production, naturally will try to escape paying any advance. Plate business still reflects the lack of large railroad car orders, but order books of one maker have been helped by the line pipe order placed last week with local mills. Fabricated steel business is rather dull in this district, but there is a fairly constant demand for plain material.

Rails and Track Supplies.—There is only a moderately active new demand and old orders are pretty well worked out. Inquiry for 250 tons of light-section rails, believed to be for export, is before the market.

Wire Products.—While not really active, business is better than it has been recently. In nails, the betterment is partly due to the fact that manufacturers are less rigid as to prices, with few now asking more than \$2.55, base, per keg, Pittsburgh. There is some resistance to \$2.50, base, per 100 lb., on plain wire, but that price still is the ruling one.

Tubular Goods.—Interest still centers on line pipe. The Texas Co. has an inquiry out for 175 miles of 12-in. pipe and smaller mileages of 10-in., 6-in. and 4-in. pipe, while a 136-mile gas pipe line has been projected by the Inland Gas Corporation, to convey gas from Kentucky to West Virginia. There is a fairly steady demand for standard-weight pipe for building and construction, but oil well drilling still is much curtailed and oil country pipe consequently is not much wanted.

Sheets.—Specifications are coming to makers in this district in good volume and excepting the car building and car repair companies, all consuming industries are represented in the releases. Demand from the automobile body makers and motor car builders shows some urgency, but there is no real pressure for shipments from other sources of consumption, and the mill suspensions common around the Fourth of July, and expected next week, will not seriously hamper manufacturers in keeping customers supplied. Prices are just about where they were a week ago. Galvanized sheets, however, are weak and in a general way 3.50c., base Pittsburgh, is the top of the market, with even less being done on roofing and siding material. Mill operations range from 70 to 75 per cent of capacity.

Tin Plate.—This product stands out as the really active one of the entire list of steel products. Can manufacturers continue to figure on a big pack of perishable foods and to order freely against contracts, with the result that most tin plate makers now are booked against probable production for the next 45 to 60 days.

Cold-Finished Steel Bars and Shafting.—Quite unexpectedly the price was reduced late last week \$2 per ton to 2.10c., base Pittsburgh or Chicago, and 2.15c., Cleveland. In view of the proposed advance of \$1 a ton in hot-rolled bars on third quarter contracts, the only explanation for the decline in cold bars seems to be that some producers believed a lower price would stimulate a rather laggard interest in needs for the quarter starting July 1. There seems to have been no consumer pressure against the former price.

Cold-Rolled Strips.—Uncertainty in hot-rolled strip

THE IRON AGE Composite Prices

Finished Steel
June 26, 1923, 2.341c. a Lb.

One week ago.....	2.341c.
One month ago.....	2.348c.
One year ago.....	2.367c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1928	2.364c.	Feb. 14:	2.314c.	Jan. 3
1927	2.453c.	Jan. 4:	2.292c.	Oct. 25
1926	2.453c.	Jan. 5:	2.402c.	May 18
1925	2.560c.	Jan. 6:	2.396c.	Aug. 18
1924	2.789c.	Jan. 15:	2.460c.	Oct. 14
1923	2.824c.	Apr. 24:	2.446c.	Jan. 2

Pig Iron
June 26, 1928, \$17.21 a Gross Ton

One week ago.....	\$17.23
One month ago.....	17.39
One year ago.....	18.71
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1928	\$17.75,	Feb. 14:	\$17.21,	June 26
1927	19.71,	Jan. 4:	17.54,	Nov. 1
1926	21.54,	Jan. 5:	19.46,	July 13
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	Mar. 20:	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.85c. to 1.90c.
F.o.b. Chicago	2.00c.
Del'd Philadelphia	2.17c. to 2.22c.
Del'd New York	2.19c. to 2.24c.
Del'd Cleveland	2.04c. to 2.09c.
F.o.b. Cleveland	1.85c.
F.o.b. Lackawanna	1.95c.
F.o.b. Birmingham	2.05c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	1.95c. to 2.00c.
F.o.b. Birmingham.....	2.00c. to 2.15c.

Rail Steel

F.o.b. mills east of Chicago district.....	1.75c.
F.o.b. Chicago Heights mill.....	1.85c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.75c.
Common iron, del'd Philadelphia.....	2.12c.
Common iron, del'd New York.....	3.14c.

Tank Plates

Base Per Lb.

F.o.b. Pittsburgh mills.....	1.85c. to 1.90c.
F.o.b. Chicago	2.00c.
F.o.b. Birmingham	2.05c.
Del'd Cleveland	2.04c. to 2.09c.
Del'd Philadelphia	2.10c. to 2.15c.
F.o.b. Coatesville	2.00c. to 2.05c.
F.o.b. Sparrows Point.....	2.00c.
F.o.b. Lackawanna	1.95c.
Del'd New York.....	2.17½c. to 2.22½c.
C.i.f. Pacific ports.....	2.25c. to 2.30c.

Structural Shapes

Base Per Lb.

F.o.b. Pittsburgh mills.....	1.85c. to 1.90c.
F.o.b. Chicago	2.00c.
F.o.b. Birmingham	2.05c.
F.o.b. Lackawanna	1.95c.
F.o.b. Bethlehem	2.00c.
Del'd Cleveland	2.04c. to 2.09c.
Del'd Philadelphia	2.06c. to 2.18c.
Del'd New York.....	2.14½c. to 2.19½c.
C.i.f. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

Base Per Lb.

Narrower than 3 in., P'gh.....	2.20c. to 2.30c.
From 3 in. to 6 in., P'gh.....	1.85c. to 2.10c.
6 in. and wider, P'gh.....	1.75c. to 1.90c.
Narrower than 3 in., Chicago.....	2.30c.
From 3 to 6 in., Chicago.....	2.20c.
6 in. and wider, Chicago.....	2.00c.
Cotton ties, f.o.b. Atlantic and Gulf ports:	
Carlots per 45-lb. bundle.....	\$1.27
2000 bundle lots.....	1.25
Larger lots	1.23

*Mills follow plate or sheet prices according to gage on wider than 12 in.

Cold-Finished Steel

Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.10c.
Bars, f.o.b. Chicago.....	2.10c.
Bars, Cleveland.....	2.15c.
Shafting, ground, f.o.b. mill.....	2.45c. to 2.90c.
Strips, 1 up to 3 tons, P'gh.....	3.00c. to 3.15c.
Strips, 1 up to 3 tons, Cleveland.....	2.90c. to 3.00c.
Strips, 1 up to 3 tons, del'd Chicago.....	3.30c. to 3.45c.
Strips, 1 up to 3 tons, Worcester.....	3.15c. to 3.30c.
Fender stock, Pittsburgh.....	4.10c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

Base Per Keg

Wire nails	\$2.55 to \$2.65
Galvanized nails	4.55 to 4.65
Galvanized staples	3.25 to 3.35
Polished staples	3.00 to 3.10
Cement coated nails.....	2.55 to 2.65

Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.35
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., (wire) mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

Base to Retailers Per Net Ton

F.o.b. Pittsburgh	\$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

Base Per Lb.

Nos. 9 and 10, f.o.b. P'gh.....	2.00c. to 2.10c.
Nos. 9 and 10, f.o.b. Chicago dist. mill.....	2.10c.
Nos. 9 and 10, del'd Cleveland.....	2.09c. to 2.19c.
Nos. 9 and 10, del'd Philadelphia.....	2.32c. to 2.42c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.20c. to 2.25c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.65c. to 2.75c.
No. 24, f.o.b. Chicago dist. mill.....	2.75c.
No. 24, del'd Cleveland.....	2.79c. to 2.89c.
No. 24, del'd Philadelphia.....	2.97c. to 3.07c.
No. 24, f.o.b. Birmingham.....	3.00c. to 3.05c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	3.85c. to 3.90c.
No. 24, f.o.b. Pittsburgh, B grade.....	3.65c. to 3.70c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.50c. to 3.60c.
No. 24, f.o.b. Chicago dist. mill.....	3.60c.
No. 24, del'd Cleveland.....	3.54c. to 3.69c.
No. 24, del'd Philadelphia.....	3.82c. to 3.92c.
No. 24, f.o.b. Birmingham.....	3.80c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	2.85c. to 2.90c.
No. 28, f.o.b. Chicago dist. mill.....	3.10c.

Automobile Body Sheets

No. 20, f.o.b. Birmingham.....	4.00c.
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Long Ternes

No. 24, 8-lb. coating, f.o.b. mill primes.....	4.10c.
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Tin Plate

Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.25
Standard cokes, f.o.b. Gary.....	5.35

Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating I.C. \$11.20	25-lb. coating I.C. \$16.70
15-lb. coating I.C. 14.00	30-lb. coating I.C. 17.75
20-lb. coating I.C. 15.30	40-lb. coating I.C. 19.85

Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quality Bar Base, 2.65c.

S.A.E. Series Numbers	Alloy Differential	Net Price 100 Lb. Bars
2000 (¼% Nickel)	0.25	\$2.90
2100 (1½% Nickel)	0.55	3.20
2300 (¾% Nickel)	1.50	4.15
2500 (5% Nickel)	2.25	4.90
3100 Nickel Chromium	0.55	3.20
3200 Nickel Chromium	1.35	4.00
3300 Nickel Chromium	3.80	6.45
3400 Nickel Chromium	3.20	5.85
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50	3.15
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70	3.35
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)	1.05	3.70
5100 Chromium Steel (0.60 to 0.90 Chromium).....	0.35	3.00
5100 Chromium Steel (0.80 to 1.10 Chromium).....	0.45	3.10
5100 Chromium Spring Steel	0.20	2.85
6100 Chromium Vanadium Bars	1.20	3.85
6100 Chromium Vanadium Spring Steel	0.95	3.60
9250 Silicon Manganese Spring Steel	0.25	2.90
Chromium Nickel Vanadium.....	1.50	4.15
Carbon Vanadium	0.95	3.60

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price. Slabs with sectional area of 16 in. or over carry the billet price; slabs with sectional area of 12 in. to 16 in. carry a \$5 extra above the billet price and slabs with a sectional area under 12 in. carry the bar price. Band sizes are 40c. per 100 lb. higher.

Rails

Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	34.00
Light (from billets), f.o.b. Ch'go mill.....	36.00

Track Equipment

Base Per 100 Lb.

Spikes, ¾ in. and larger.....	\$2.80
Spikes, ½ in. and smaller.....	2.80
Spikes, boat and barge.....	3.00
Tie plates, steel.....	2.15
Angle bars	2.75
Track bolts, to steam railroads.....	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count.....	70 per cent off list

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Inches	Steel Black	Galv.	Inches	Iron Black	Galv.
¼	45	19½	¼ to ¾.....	+11	+39
½ to ¾.....	51	25½	¾	22	2
¾	56	42½	¾	28	11
¾	60	48½	1 to 1½.....	30	13
1 to 3.....	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6.....	59	47½	2½	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10.....	54	41½	7 to 12.....	26	11
11 and 12.....	53	40½			

Butt Weld, extra strong, plain ends

¼	41	24½	¼ to ¾.....	+19	+54
½ to ¾.....	47	30½	¾	21	17
¾	53	42½	¾	28	12
¾	58	47½	1 to 1½.....	30	14
1 to 1½.....	60	49½			
2 to 3.....	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10.....	45	32½	9 to 12.....	16	2
11 and 12.....	44	31½			

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2½ in.....	27
2½ to 3 in.....	37
3 in.....	40
3½ to 3¾ in.....	42½
4 to 13 in.....	46
	1½ in.....+18
	1¾ to 1½ in.....+ 8
	2 to 2½ in.....- 2
	2½ to 3 in.....- 7
	3¾ to 4½ in.....- 9

Beyond the above discounts, 7 fives extra are given on lap welded steel tubes and 2 tens and 5 on charcoal iron tubes on lots of 21,000 lb. and more.

Standard Commercial Seamless Boiler Tubes

Cold Drawn	Hot Rolled
1 in.....	63
1¼ to 1½ in.....	55
1¾ in.....	39
2 to 2½ in.....	34
2½ to 3 in.....	42
3 in.....	54
3 in.....	43
3½ in.....	50
4 in.....	53
4½, 5 and 6 in.....	45
2 and 2½ in.....	40
2½ and 3 in.....	48
3 in.....	54
3½ and 3¾ in.....	56
4 in.....	59
4½, 5 and 6 in.....	48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30%, base (carloads).....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	

prices is reflected to some extent in cold-rolled strip prices, but it is seen in more numerous sales at the recent minimum price than in an outright decline. Specifications, although off from those of a month ago, are heavier than many expected they would be at that time.

Bolts, Nuts and Rivets.—Manufacturers report that third-quarter contracts are coming along well. Current buying and specifications are moderately heavy and sufficient to sustain plant operations at around 50 per cent of capacity. Prices show no change.

Semi-Finished Steel.—A strong effort is being made to reestablish base size billets to \$33, Pittsburgh. Meanwhile, users are arguing for a lower price and holding back specifications on the ground that the price should be lower in view of the low levels on pig iron and scrap. Producers say that most of the billets and slabs now marketed go to strip makers, whose specifications are really for forging quality steel. It is probable that the third-quarter price will be set at \$33. Sheet bars, on the other hand, are weak and recently sold at \$32, Youngstown, and it is doubted that more could be obtained here. Indeed, in view of the probability that sheet bars are likely soon to face competition from strip-mill breakdowns, it is possible that, instead of sheet bars selling at more than billets and slabs, they will be lower when third-quarter contract prices are announced. On wire rods, \$44, base Pittsburgh, appears to be out of the question, since they are available from more than one source at \$42 and some business has been lost at that quotation.

Hot-Rolled Flats.—Viewed strictly from the angle of specifications, the market is quite satisfactory, but the price situation still leaves much to be desired by manufacturers. While the regular quotations rule on small lot orders, they do not mean much on the large tonnage business, particularly on widths of more than 3 in. There has been a report that another size bracket, taking in widths of 1½ in. and less, was to be set up, but investigation discloses that manufacturers are giving some attention to going to a single base size bracket.

Coke and Coal.—The market for spot coke still is very limited. With both wants and supplies very small, there is no occasion to change the prices that have ruled for several weeks. Quietly, there has been a fair amount of third-quarter contracting for furnace coke, and foundries have very generally renewed arrangements with regular sources of supply for the remainder of the year. The coal market shows neither real activity nor much strength. Lake cargo orders, which have been counted on to help the local situation, have not yet appeared in volume.

Old Material.—One steel maker in this district has bought a good-sized tonnage of heavy melting steel during the week. The material, which was of the better sort, was purchased at \$14.50, representing a further recession of 25c. a ton. That price also is avail-

able for delivery to another Pittsburgh district point. Generally, however, steel makers are not much interested in the market, and, with short orders well covered, prices lack the support of dealer buying. On compressed sheets, \$14 appears to be all that can be obtained, while \$13 measures the limit on bundled sheet sides and ends. Machine shop turnings still are very weak, and, while dealers want more, \$9 is all that can be obtained. Blast furnace scrap also is weak, with \$10.50 now the top of the market. The steel foundry grades are sagging for want of demand, with railroad knuckles, couplers, springs and carwheels no longer quotable at more than \$15.50 and some "distress" sales being made as low as \$15. The low level to which basic iron has fallen has had an effect upon the value of heavy melting steel scrap. The belief that present prices of scrap would discourage collection of it has not been fulfilled, certainly not to the extent of narrowing the gap between supply and demand. Some liquidation of yard stocks by dealers also has helped to depress prices.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Furnace Grades:	
Heavy melting steel	\$14.00 to \$14.50
Scrap rails	14.00 to 14.25
Compressed sheet steel	14.00
Bundled sheets, sides and ends...	13.00
Cast iron carwheels	14.00 to 14.50
Sheets bar crops, ordinary.....	14.50 to 15.00
Heavy breakable cast	12.00 to 12.50
No. 2 railroad wrought.....	14.25 to 14.50
Heavy steel axle turnings.....	12.50 to 13.00
Machine shop turnings	9.00
Acid Open-Hearth Furnace Grades:	
Railroad knuckles and couplers..	15.00 to 15.50
Railroad coil and leaf springs...	15.00 to 15.50
Rolled steel wheels	15.00 to 15.50
Low phosphorus billet and bloom ends	19.00 to 19.50
Low phosphorus, mill plate.....	17.50 to 18.00
Low phosphorus, light grade.....	16.50 to 17.00
Low phosphorus sheet bar crops..	17.50 to 18.00
Heavy steel axle turnings.....	12.50 to 13.00
Electric Furnace Grades:	
Low phosphorus punchings.....	16.50 to 17.00
Heavy steel axle turnings.....	12.50 to 13.00
Blast Furnace Grades:	
Short shoveling steel turnings...	10.00 to 10.50
Short mixed borings and turnings	10.00 to 10.50
Cast iron borings.....	10.00 to 10.50
No. 2 busheling	9.00
Rolling Mill Grades:	
Steel car axles.....	18.00 to 18.50
No. 1 railroad wrought.....	10.50 to 11.00
Sheet bar crops.....	16.50 to 17.00
Cupola Grades:	
No. 1 cast.....	14.25 to 14.50
Rails 3 ft. and under.....	15.50 to 16.00
Malleable Grades:	
Railroad	14.00 to 14.50
Industrial	13.50 to 14.00
Agricultural	13.00 to 13.50

Pittsburgh District More Active Than Last Year

Business and industrial activity in the Greater Pittsburgh district in the first half of June was at slightly higher average rate than in June of last year, but showed some falling off compared with the previous month, according to a survey by the Bell Telephone Co. of Pennsylvania. Pig iron production, based upon the number of furnaces active in relation to the number available, is placed at 65.4 per cent for June this year, compared with 60.3 per cent a year ago. Steel ingot production is estimated at 76 per cent, against 74.2 per cent in June, 1927; coal mine operation at 52.5 per cent, against 49.4 per cent a year ago; and building at 71 per cent against 69.5 per cent a year ago.

The machinery trades are rated at 83 per cent, a loss of 1 point from June, 1927; beehive oven coke production, at 13.4 per cent, contrasts with 27.2 per cent a year ago; and the railroad equipment industry, at 71.5 per cent, is seven points poorer than a year ago. The general average is given as 62.9 per cent, which compares with 63.6 per cent in May and 62 per cent in June, 1927.

Shevlin Engineering Co., engineer and contractor, specializing in installations of mechanical and power plant equipment, has taken new offices at 227 Fulton Street, New York.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforcing steel bars	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons.....	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Hoops	4.00c. to 4.50c.
Black sheets (No. 24 gage), 25 or more bundles	3.55c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.40c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.10c.
Galvanized corrugated sheets (No. 28 gage), per square	\$1.31
Spikes, large	3.40c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Track bolts, all sizes, per 100 count, 60 per cent off list	
Machine bolts, per 100 count, 60 per cent off list	
Carriage bolts, per 100 count, 60 per cent off list	
Nuts, all styles, per 100 count, 60 per cent off list	
Large rivets, base per 100 lb.	\$3.50
Wire, black soft annealed, base per 100 lb.	\$3.00 to 3.10
Wire, galvanized soft, base per 100 lb.	3.00 to 3.10
Common wire nails, per keg.....	3.00
Cement coated nails, per keg.....	3.05

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

Billets and Blooms	
	Per Gross Ton
Rerolling, 4-in. and over.....	\$32.00 to \$33.00
Rerolling, under 4-in. to and including 1½-in.	33.00 to 34.00
Forging, ordinary	38.00
Forging, guaranteed	43.00

Sheet Bars	
	Per Gross Ton
Open-hearth or Bessemer.....	\$33.00 to \$34.00

F.o.b. Pittsburgh or Youngstown

Slabs	
	Per Gross Ton
8 in. x 2 in. and larger.....	\$32.00 to \$33.00
Smaller than 8 in. x 2 in.....	33.00 to 34.00

Skelp	
	Per Lb.
Grooved	1.85c. to 1.90c.
Sheared	1.85c. to 1.90c.
Universal	1.85c. to 1.90c.

Wire Rods	
	Per Gross Ton
*Common soft, base.....	\$42.00
Screw stock	\$5.00 per ton over base

*Chicago mill base is \$44 to \$45. Cleveland mill base, \$43 to \$44.

Prices of Raw Material

Ores	
Lake Superior Ores, Delivered Lower Lake Ports	
	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	
	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria.....	10.00c.
Iron ore, Swedish, average 66% iron, 9.25c. to 9.50c. from the Caucasus.....	39c.
Manganese ore, washed, 52% manganese, basis 50%	38c. to 39c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$11.00 to \$11.25
Per Gross Ton	
Chrome ore, 45 to 50% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard	\$22.00 to \$24.00
Per Lb.	
Molybdenum ore, 85% concentrates of MoS ₂ , delivered	50c. to 55c.

Coke	
	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$2.60 to \$2.75
Foundry, f.o.b. Connellsville prompt	3.50 to 4.25
Foundry, by-product, Chgo ovens.....	8.00
Foundry, by-product, New England, del'd	11.00
Foundry, by-product, Newark or Jersey City, delivered.....	9.00 to 9.40
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b. ovens.....	9.00
Foundry by-prod., del'd St. Louis.....	9.75

Coal	
	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.80
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Gas coal, ¾-in., f.o.b. Pa. mines.....	2.00 to 2.10
Mine run gas coal, f.o.b. Pa. mines.....	1.75 to 1.90
Steam slack, f.o.b. W. Pa. mines.....	1.00 to 1.05
Gas slack, f.o.b. W. Pa. mines.....	1.10 to 1.15

Ferromanganese	
	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$105.00
Foreign, 80%, Atlantic or Gulf port, duty paid	105.00

Spiegeleisen	
	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$31.00 to \$32.00
Domestic, 16 to 19%.....	29.00

Electric Ferrosilicon	
	Per Gross Ton Delivered
50%	\$83.50 to \$88.50
75%	130.00 to 140.00
Per Gross Ton Furnace	
10%	\$35.00
11%	37.00
12%	\$39.00
14 to 16%	45.00

Bessemer Ferrosilicon	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
10%	\$30.00
11%	32.00
12%	\$34.00

Silvery Iron	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
6%	\$23.00
7%	24.00
8%	25.00
9%	26.00
	Per Gross Ton
10%	\$28.00
11%	30.00
12%	32.00

Other Ferroalloys	
Ferrotungsten, per lb. contained metal, del'd .....	.95c.
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads.....	11.00c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace	\$3.15 to \$3.65
Ferrocobaltitium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per gross ton.....	\$122.50

Fluxes and Refractories	
Fluorspar	
	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$16.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$16.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay	
	Per 1000 f.o.b. Works
	First Quality Second Quality
Pennsylvania	\$43.00 to \$46.00 \$35.00 to \$38.00
Maryland	43.00 to 46.00 35.00 to 38.00
New Jersey	50.00 to 65.00
Ohio	43.00 to 46.00 35.00 to 38.00
Kentucky	43.00 to 46.00 35.00 to 38.00
Missouri	43.00 to 46.00 35.00 to 38.00
Illinois	43.00 to 46.00 35.00 to 38.00
Ground fire clay, per ton	7.00

Silica Brick	
	Per 1000 f.o.b. Works
Pennsylvania	\$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton.....	\$8.50 to 10.00

Magnesite Brick	
	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick	
	Per Net Ton
Standard size	\$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts	
Per 100 Pieces	
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)	
	Per Cent Off List
Machine bolts .....	.70
Carriage bolts .....	.70
Lag bolts .....	.70
Plow bolts, Nos. 1, 2, 3 and 7 heads.....	.70
Hot-pressed nuts, blank or tapped, square.....	.70
Hot-pressed nuts, blank or tapped, hexagons.....	.70
C.p.c. and t. square or hex. nuts, blank or tapped .....	.70
Washers*	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including ¾ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts	
Per Cent Off List	
Semi-finished hexagon nuts.....	.70
Semi-finished hexagon castellated nuts, S.A.E.....	.70
Stove bolts in packages, Pittsburgh.....	.80, 10 and 2½
Stove bolts in packages, Chicago.....	.75, 20, 10 and 5
Stove bolts in bulk, Pittsburgh.....	.80, 10 and 5
Stove bolts in bulk, Chicago.....	.75, 20, 10, 5 and 2½
Tire bolts .....	.60, 5 and 5

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 to 60 per cent apply.

Large Rivets	
(½-In. and Larger)	
	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland.....	\$2.90
F.o.b. Chicago	3.00

Small Rivets	
(¾-In. and Smaller)	
	Per Cent Off List
F.o.b. Pittsburgh .....	.70 and 10
F.o.b. Cleveland .....	.70 and 10
F.o.b. Chicago .....	.70 and 10

Cap and Set Screws	
(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)	
	Per Cent Off List
Milled cap screws.....	.80, 10 and 10
Milled standard set screws, case hardened.....	.80 and 10
Milled headless set screws, cut thread.....	.80, 10 and 10
Upset hex. head cap screws, U.S.S. thread.....	.85 and 5
Upset hex. cap screws, S.A.E. thread.....	.85 and 5
Upset set screws.....	.80, 10 and 10
Milled studs .....	.70 and 5

Chicago

Good Structural Outlook But Operations Off 3 to 4 Per Cent

CHICAGO, June 26.—Third-quarter prices for the heavy tonnage steel mill products are as yet unannounced and this delay is in some measure accountable for the lack of interest being shown by consumers in requirements for the next three months. Producers of cold drawn bars have made reductions in prices for the coming quarter and in some commodities, such as nails, efforts to hold quotations at previously announced levels are not meeting with success.

The common impression that July and August will be comparatively dull months in business generally is leading purchasers to buy in small lots and so prices now being obtained for practically all commodities must be gaged on that score. Sales in plates, shapes and bars are measurably below shipments, which now represent only 80 per cent of ingot capacity, a drop of 3 to 4 points in the week. On the other hand specifications, though lower than last week, still represent a total tonnage not far from the current rate of deliveries. Characteristics of bar orders are that individual releases are small and the variations in sizes so great that often deliveries are made in a considerably longer time than mill schedules would indicate as being possible.

One promising feature of the steel business is the outlook in the structural market. The New York Central has ordered 1000 tons for a depot at South Bend, Ind. Action may be taken on the Austin High School, Chicago, this week, and the Fine Arts Building, Chicago, taking 5000 tons, may be placed by the middle of July. At Kansas City, Mo., close to 2500 tons will be needed for an assembly plant for the Chevrolet Motor Co.

Pig Iron.—Forward buying continues to drag, while current sales for close by delivery are increasing. Melters, particularly those having small capacity, are cautious both as to the trend in their businesses and prices for merchant iron. Compilation of June shipments shows them to total less than for May, but larger than in the sixth month of 1927. A user in Joliet, Ill., will buy 700 tons of foundry iron. A foundry in western Michigan has closed for 700 tons of 8 per cent silvery at the full schedule. Southern iron has been reduced 50c. a ton at Birmingham.

Prices per gross ton at Chicago:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$18.00
N'th'n No. 1 fdy., sil. 2.25 to 2.75	18.50
Malleable, not over 2.25 sil.	18.00
High phosphorus	18.00
Lake Superior charcoal averaging sil. 1.50	27.04
Southern No. 2 fdy. (all rail)	21.51
Southern No. 2 (barge and rail)	21.01
Low phos., sil. 1 to 2 per cent, copper free	\$28.50 to 29.00
Silvery, sil. 8 per cent	29.79
Bessemer ferrosilicon, 14 to 15 per cent	46.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—Spiegeleisen in the 19 to 21 per cent grade has gained strength at \$33, Hazard, Pa., or \$40.76, delivered Chicago. Reduction in steel mill operations is further indicated by lighter specifications for ferrosilicon. The ferromanganese market is quiet.

Prices delivered Chicago: 80 per cent ferromanganese, \$112.56; 50 per cent ferrosilicon, \$83.50 to \$87.50; spiegeleisen, 19 to 21 per cent, \$40.76.

Plates.—Little lies in promise for local plate mills except current tonnage from miscellaneous manufacturers. Car shops have practically completed issuing specifications against large equipment purchases, and with oil consumption gaining, the opinion is rather generally expressed that the stress of immediate storage facilities is at least temporarily relieved. Greater interest is being shown in the 12,000 tons of plates needed for a water line in Denver. The Marine Iron & Shipbuilding Co., Duluth, will require 1000 tons for three scows that it has under contract, and a boiler

manufacturer in the Middle West will buy 5000 tons for third-quarter requirements. The 250 stock cars reported placed last week by the Omaha lines of the Chicago & North Western are now definitely known to have been taken by the Pullman Car & Mfg. Corporation. The Missouri, Kansas, Texas has ordered 10 air dump cars from the Western Wheeled Scraper Co., and the Chicago, Milwaukee, St. Paul & Pacific has closed for two 200-ton flat cars with the Standard Steel Car Co. Local producers figure that about 4000 tons of car materials will be needed for 400 cars which will be built in Western shops for the Erie Railroad. Plate deliveries have improved materially in the last month and most sizes can now be had in two to three weeks. The Chicago market is quotable at 2c., but this is being tested only by small tonnages. Third-quarter contracting is dull in the absence of stated price policies for the next three months.

Mill prices on plates, per lb.: 2.00c., base Chicago.

Structural Material.—Structural awards in miscellaneous orders total about 5000 tons for the week and fresh inquiry is for 3500 tons. At Chicago the largest single award was 3000 tons for the Harmon Sports Arena, and the Wisconsin Bridge Co. has taken 1000 tons for a bridge at Nelson, Ill., for the Chicago & North Western. Three fresh projects of 1000 tons each are before fabricators in the Omaha territory, and a bridge at Blair, Wis., calls for about 1000 tons. Taken as a whole, the structural steel market holds some promise that there will be a fair run of business, continuing well into midsummer. Inquiries are varied and it is quite noticeable that industrial projects are more numerous than for many months. Prices obtained by fabricators are not satisfactory from the standpoint of profits, but it can at least be said that prices bid by the shops are reasonably steady.

Mill prices on plain material, per lb.: 2.00c., base, Chicago.

Bolts, Nuts and Rivets.—Third-quarter contracting is near the end and there has been little opposition to prices. Total specifications are larger, as railroads' requirements grow and farm implement manufacturers find that stocks had been reduced below the practicable limit. The demand for small rivets is steady.

Reinforcing Bars.—Outstanding among awards for the week is 5000 tons of rail steel bars for the Merchandise Mart, Chicago. Smaller orders are also more in evidence, with purchases of 5 to 25 tons each unusually numerous. Shop backlogs have increased, though, because of the lateness of the season, it is improbable that operations will become heavier unless contractors press for deliveries. Fresh inquiries are increasing, lending added interest to a market that is showing more life. A printing press manufacturer in Chicago will erect a building requiring close to 600 tons of reinforcing bars. Prices are more stable than for many months past, though large-tonnage billet bar contracts are needed to give the market a real test. Orders and new inquiries are shown on page 1858.

Cold-Rolled Bars.—Local producers have announced a third quarter price of 2.10c., base, per lb., Chicago. Specifications for the first three weeks of June were fully up to the average in May. Forward contracting is actively under way.

Bars.—A sharp drop in specifications following two weeks in which orders entered at mills were unusually large gives further force to the thought that buyers having specified heavily against second quarter contracts are now in a strong position to hold out of the market at the time when third-quarter requirements should be given their attention. New buying in soft steel bars is accordingly dull. Improvement in delivery of mild steel bars is noteworthy, the range now being two to three weeks. The Chicago market is nominally at 2c. Sales are not large and orders at 1.95c., Chicago, are being taken. Readjustment in the automobile trade accounts for a smaller demand for alloy-steel bars. Prices for this commodity are steady and alloy differentials are holding. Several railroads have entered sizable orders for iron bars at 2c., Chicago. Both rail steel bar mills in this district are operating at capacity. Barn equipment manufacturers are especially busy and there is a better tone to the bed trade. It is now assured that June shipments will

be the largest in the history of the local mills. Prices of rail steel are steady at 1.85c., while small tonnages bring 1.90c., Chicago Heights.

Mill prices per lb.: Soft steel bars, 2.00c., base, Chicago; common bar iron, 2.00c., base, Chicago; rail steel bars, 1.85c., base, Chicago Heights mill.

Wire Products.—A spurt in specifications from the manufacturing trade indicates anxiety on the part of buyers to make use of second-quarter contracts to the limit and it is rather generally accepted by producers that shipments against second quarter contracts will be willingly extended well into July. While some progress is being made in forward buying, there is evidence in this market, as in others, that buying in the summer months will be at close range. The jobbing trade is only moderately active, though past specifications and orders are helping to hold mill output at a level close to 65 per cent of capacity. There is little or no change in the nail market. Buyers are quiet and prices range from \$2.60, base, per keg, Chicago, to \$2.70. Scattered rains throughout most of the Middle West have done much to relieve the crop situation, which for a time did not look favorable. In the South heavy rainfall has resulted in damage to crops from floods and has made fields unworkable. Prices for wire and wire products are given on page 1843.

Rails and Track Supplies.—Local steel mills have taken miscellaneous orders for a total of 1000 tons of standard section rails. The demand for light rails is heavier, new orders totaling close to 1500 tons. Releases against rail contracts are favoring mills to hold operations at 80 per cent of capacity through this week, though it is not improbable that output will be cut in the next ten days. A fair tonnage of spikes, bolts and angle bars has been purchased this week, but operations in these departments have fallen. Tie plate shipments are heavy and output is close to capacity.

Prices f.o.b. mill, per gross ton: Standard-section open-hearth and Bessemer rails, \$43; light rails, rolled from billets, \$36. Per lb.: Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.25c.; angle bars, 2.75c.

Coke.—Shipments of by-product foundry coke, though running somewhat below May, will compare favorably with the sixth month of 1927. Prices are steady at \$8, f.o.b. local ovens, and \$8.75, delivered in the Chicago switching district.

Sheets.—Operating schedules continue unusually close and it is not improbable that since there is one holiday next week several hot mills will not be started in that week and so afford a little more time for tonnage to accumulate and assure better operating conditions for the following week. The new low level in prices given last week appears to be holding moderately well. Although all sellers are dissatisfied with the price situation, there seems to be little opportunity to improve conditions. Demand for black sheets and galvanized sheets is dull and even in the blue annealed commodity buyers show little or no inclination to anticipate requirements beyond the next few weeks. Blue annealed sheets may be had in two to three weeks,

black sheets in seven to ten days and galvanized sheets in ten days to two weeks.

Base prices per lb., delivered from mill in Chicago: No. 24 black, 2.80c.; No. 24 galvanized, 3.65c.; No. 10 blue annealed, 2.15c. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Cast Iron Pipe.—Buyers are showing more interest and prices are holding. The United States Cast Iron Pipe & Foundry Co. has taken 750 tons of pipe for West Allis, Wis., and 125 tons for Dayton, Ohio. The Lynchburg Foundry Co. has closed for 700 tons for Niles Center, Ill., and the McWane Cast Iron Pipe Co. will furnish 500 tons for Columbia, Ill. Chillicothe, Ohio, has ordered 115 tons from James B. Clow & Sons. Of special interest among fresh inquiries is 650 tons needed by the Santa Fe Railroad at Galesburg, Ill., and Morton Grove, Ill., will buy 1000 tons of 6 and 8-in. pipe. It is reported here that the 2500 tons wanted by Roseville, Mich., has been closed. New bids will be taken July 3 at St. Paul on 1100 tons of 6 to 16-in. pipe. Sellers are expecting a dull buying period in July and the first half of August.

Prices per net ton, delivered Chicago: Water pipe, 6-in. and over, \$40.20 to \$41.20; 4-in., \$44.20 to \$45.20; Class A and gas pipe, \$4 extra.

Old Material.—The scrap market is more sluggish than in many weeks. Railroad shipments are heavy and match well with users requirements, so that both hold up orders, and requests for prompt delivery are the exception. Dealers are paying \$12.75 a gross ton for heavy melting steel and \$11 is a common price in dealer trades in hydraulic bundles. A producer of borings has sold 1500 tons to be delivered as made. Brokers are offering this grade to users at \$9.50 a ton, but on the speculative possibilities of the 1500-ton purchase, the producer was paid \$9.65, delivered. Railroad lists offered at 8000 tons by the St. Paul and 4000 tons by the Burlington.

Prices delivered consumers' yards, Chicago:
Per Gross Ton

Basic Open-Hearth Grades:

Heavy melting steel.....	\$12.50 to \$13.00
Shoveling steel	12.50 to 13.00
Frogs, switches and guards, cut apart, and miscellaneous rails.....	13.25 to 13.75
Hydraulic compressed sheets.....	11.25 to 11.75
Drop forge flashings.....	9.50 to 10.00
Forged, cast and rolled steel car wheels	15.50 to 16.00
Railroad tires, charging box size.....	15.75 to 16.25
Railroad leaf springs, cut apart.....	15.75 to 16.25

Acid Open-Hearth Grades:

Steel couplers and knuckles.....	14.00 to 14.50
Coil springs	16.00 to 16.50

Electric Furnace Grades:

Axle turnings	12.50 to 13.00
Low phosphorus punchings.....	14.50 to 15.00
Low phosphorus plate, 12 in. and under	14.00 to 14.50

Blast Furnace Grades:

Axle turnings	9.50 to 10.00
Cast iron borings.....	9.00 to 9.50
Short shoveling turnings.....	9.00 to 9.50
Machine shop turnings.....	6.50 to 7.00

Rolling Mill Grades:

Iron rails	13.50 to 14.00
Rerolling rails	14.75 to 15.25

Cupola Grades:

Steel rails less than 3 ft.....	15.50 to 16.00
Angle bars, steel.....	14.25 to 14.75
Cast iron carwheels.....	13.00 to 13.50

Malleable Grades:

Railroad	12.50 to 13.00
Agricultural	11.50 to 12.00

Miscellaneous:

*Relaying rails, 56 to 60 lb.....	23.00 to 25.00
*Relaying rails, 65 lb. and heavier	26.00 to 31.00

Per Net Ton

Rolling Mill Grades:

Iron angles and splice bars.....	14.00 to 14.50
Iron arch bars and transoms.....	19.50 to 20.00
Iron car axles.....	23.00 to 23.50
Steel car axles.....	15.50 to 16.00
No. 1 railroad wrought.....	11.00 to 11.50
No. 2 railroad wrought.....	11.00 to 11.50
No. 1 busheling	9.50 to 10.00
No. 2 busheling	5.75 to 6.25
Locomotive tires, smooth.....	12.00 to 12.50
Pipes and flues.....	8.00 to 8.50

Cupola Grades:

No. 1 machinery cast.....	13.50 to 14.00
No. 1 railroad cast.....	13.00 to 13.50
No. 1 agricultural cast.....	12.50 to 13.00
Stove plate	11.00 to 11.50
Grate bars	11.25 to 11.75
Brake shoes	10.50 to 11.00

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Soft steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.30c. to 3.00c.
Reinforcing bars, hard steel.....	2.00c. to 2.70c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Bands	3.65c.
Hoops	4.15c.
Black sheets (No. 24).....	3.95c.
Galvanized sheets (No. 24).....	4.80c.
Blue annealed sheets (No. 10).....	3.50c.
Spikes, standard railroad.....	3.55c.
Track bolts	4.55c.
Rivets, structural	3.60c.
Rivets, boiler	3.60c.
	Per Cent Off List
Machine bolts	60
Carriage bolts	60
Coach or lag screws.....	60
Hot-pressed nuts, squares, tapped or blank..	60
Hot-pressed nuts, hexagons, tapped or blank..	60
No. 8 black annealed wire, per 100 lb.....	\$2.30
Common wire nails, base per keg.....	3.10
Cement coated nails, base per keg.....	3.10

Philadelphia

Steel Buyers Not Contracting—Pig Iron Quiet but Firm

PHILADELPHIA, June 26.—Mill operations in eastern Pennsylvania continue at about the same rate as in the past few weeks, from 60 to 65 per cent, and shipments against current contracts are in fair volume. New business, however, is decidedly small and consumers show no interest in making new contracts for the next quarter. Apparently there will be a considerable number of extensions of present contracts, and then consumers will satisfy any additional requirements as they arise. The Pennsylvania Railroad, which has usually issued a call for bids on its quarter's requirements by this time, has only asked for prices on track material and about 160 tons of various sizes of steel pipe.

Most mills are asking 1.90c., Pittsburgh, on bars, 2.05c., Coatesville, on plates, and 2.05c., Bethlehem, on shapes for third-quarter delivery and the leading independent in eastern Pennsylvania has established these as its third-quarter prices. Current sales of material which will be delivered into next month, however, are being made at \$1 a ton less, the second-quarter contract price, and with further generous specifications regarded as allowable under present contracts, the \$1 a ton advance is not yet taken as definitely firm. Shapes continue slightly weaker than bars or plates, although the leading independent in this district has established 2.05c., Bethlehem, for the next quarter and the Pencoyd, Pa., producer is understood to have advanced its price to 2.05c., Pencoyd. Sheets are quiet and prices still show weakness, especially on galvanized.

Pig Iron.—Consumers exhibit but little interest in third-quarter contracting, evidently finding that shipments against their present commitments are sufficient to provide a satisfactory supply on their yards for use in the early part of the coming quarter. The price of No. 2 foundry is unchanged at \$20, furnace, despite the lack of tonnage being offered. Pusey & Jones Co., Wilmington, Del., has closed on about 500 tons of foundry iron. The Consolidated Machine Tool Corporation, Rochester, N. Y., has bought about 600 tons of foundry grade for its Hilles & Jones plant at Wilmington, and the inquiry for third quarter of the American Engineering Co., Philadelphia, is still open. No sales of basic are reported.

Prices per gross ton at Philadelphia:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$20.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26
East. Pa. No. 1X,	21.76
Basic (delivered eastern Pa.)	\$19.00 to 19.50
Gray forge	19.75 to 20.25
Malleable	21.00 to 21.50
Standard low phos. (f.o.b. New York State furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00
Virginia No. 2 plain, 1.75 to 2.25 sil.	24.54
Virginia No. 2X, 2.25 to 2.75 sil.	25.04

Prices, except as specified otherwise, are delivered Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

Bars.—Although 1.90c., Pittsburgh, is being quoted as the third-quarter contract price, business for delivery next month at 1.85c., Pittsburgh. Users of bars show but little interest in entering into further contracts, apparently believing that they can buy just as satisfactorily when their requirements arise during the coming quarter.

Shapes.—The leading independent in this district is asking 2.05c., Bethlehem, or 2.18c., Philadelphia, for next quarter, and the Pencoyd, Pa., mill is reported to have advanced its quotations \$1 a ton to 2.05c., Pencoyd, or 2.11c., Philadelphia. Other eastern Pennsylvania sellers seem to be willing to accept business for current or future delivery at 2c., Bethlehem. The tonnage of fabricated steel in prospect is good, but prices are still low. Atlantic City, N. J., is the scene of considerable building activity.

Plates.—Current business is going in most cases at 2.05c., Coatesville, but this higher price is principally because of the small tonnage specified in most orders.

Buyers believe that a desirable order would probably bring out a quotation of 2c., Coatesville, or 2.10c., delivered Philadelphia.

Sheets.—Blue annealed sheets range from 2c. to 2.10c., Pittsburgh, or 2.32c. to 2.42c., delivered Philadelphia, with new business mostly in carload lots or less. Black sheets are quiet at 2.65c., Pittsburgh, or 2.97c., Philadelphia, and concessions of \$1 a ton are reported on desirable tonnages. Galvanized sheets are evidently being maintained at 3.50c., Pittsburgh, or 3.82c., delivered Philadelphia, despite reports of sales at concessions in other districts. Consumers seem to be fairly well covered in their requirements for the present and are not inclined to commit themselves for the future.

Warehouse Business.—Prices are being maintained unchanged and a moderate volume of small tonnage orders is reported. June will apparently rank among the good months of the year, but not the largest in point of tonnage.

Imports.—In the week ended June 23, pig iron arrivals at this port totaled 7224 gross tons, of which 6526 tons came from Great Britain, 49 tons from Norway and 649 tons from India. Steel imports consisted of 501 tons of steel skelp and 25 tons of wire rods from Germany, 41 tons of bars and 22 tons of bands from France, 1 ton of iron bars from Sweden and 35 tons of steel scrap from Great Britain.

Old Material.—Very little iron or steel scrap has been bought in the past week, but a tonnage of No. 1 steel has been purchased for shipment to Bethlehem, Pa., at \$13 per ton, delivered. Recent purchases of No. 1 blast furnace scrap have totaled several thousand tons and were at \$10 per ton, delivered to Steelton, Pa., and Sparrows Point, Md., and \$9.50 per ton, delivered Bethlehem, Pa. All grades show a tendency toward weakness and sellers offer but little resistance to the efforts of buyers to obtain lower prices.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$13.00 to \$13.50
Scrap T rails	12.50 to 13.00
No. 2 heavy melting steel	10.50 to 11.00
No. 1 railroad wrought	13.50 to 14.50
Bundled sheets (for steel works)	10.00 to 10.50
Machine shop turnings (for steel works)	10.50
Heavy axle turnings (for equivalent)	12.00
Cast borings (for steel works and rolling mill)	10.50
Heavy breakable cast (for steel works)	15.00 to 15.50
Railroad grate bars	11.00
Stove plate (for steel works)	11.00
No. 1 low phos., heavy, 0.04 per cent and under	17.50 to 18.00
Couplers and knuckles	14.50 to 15.00
Roller steel wheels	14.50 to 15.00
No. 1 blast furnace scrap	9.50 to 10.00
Machine shop turnings (for rolling mill)	11.00 to 11.25
Wrought iron and soft steel pipes and tubes (new specifications)	12.00 to 12.50
Shafting	17.00 to 17.50
Steel axles	19.00 to 20.00
No. 1 forge fire	11.00 to 11.50
Cast iron carwheels	15.50 to 16.00
No. 1 cast	16.00 to 16.50
Cast borings (for chemical plant)	14.50 to 15.00
Steel rails for rolling	14.50 to 15.00

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, 1/4-in. and heavier	2.50c. to 2.60c.
Plates, 5/16-in.	2.80c. to 3.00c.
Structural shapes	2.40c. to 2.60c.
Soft steel bars, small shapes and iron bars (except bands)	2.60c.
Round-edge iron	3.50c.
Round-edge steel, iron finished 1 1/2 x 1 1/2 in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	2.50c. to 3.00c.
Cold-finished steel, rounds and hexagons	3.35c.
Cold-finished steel, squares and flats	3.85c.
Steel hoops	3.50c.
Steel bands, No. 12 gage to 1/4-in., inclusive	3.25c.
Spring steel	5.00c.
*Black sheets (No. 24)	3.85c.
*Galvanized sheets (No. 24)	4.60c.
Blue annealed sheets (No. 10)	3.15c.
Diamond pattern floor plates—	
1/4-in.	5.30c.
5/16-in.	5.50c.
Rails	3.20c.
Swedish iron bars	6.60c.

*For 50 bundles or more; 10 to 49 bundles, 4.10c. base; 1 to 9 bundles, 4.35c. base.

*For 50 bundles or more; 10 to 49 bundles, 4.95c. base; 1 to 9 bundles, 5.30c. base.

New York

Large Structural Projects Call for 100,000 Tons—Foundry Operations Spotty

NEW YORK, June 26.—Pig iron sales in this district during the week totaled 9000 tons. This aggregate is fair, in view of the small size of most current orders and the apparent disinclination of melters to commit themselves into the future. Foundry operations are spotty and in many cases a dearth of forward bookings in castings accounts for the conservatism in pig iron buying. Sufficient business is developing on a short-time basis, however, to sustain a fair average melt, and certain lines, notably radiator plants, are in a very satisfactory position. Manufacturers of heating equipment have just announced advances of 10 per cent on radiators and 5 per cent on boilers, following an advance of 5 per cent on radiators about a month ago. Prices on Buffalo foundry iron are steadier, and on the smaller tonnages \$16.50, base furnace, is a commoner quotation, although \$16, base, has not disappeared. Efforts of sellers to take advantage of barge and barge-and-rail rates have so increased the demand for water craft that the transportation companies are taking a more independent attitude on rates. The Worthington Pump & Machinery Corporation is in the market for 445 tons of foundry iron for Holyoke, Mass., 500 tons for Buffalo and 40 tons for Harrison, N. J. The General Electric Co. is inquiring for 150 tons of low phosphorus for Schenectady, N. Y. A Bridgeport, Conn., melter is inquiring for 200 tons of foundry for August to November delivery. The Consolidated Machine Tool Corporation, Rochester, N. Y., has placed 600 tons of foundry for its Hilles & Jones plant, Wilmington, Del. The Buffalo producer of silvery plans to blow out the furnace making that product July 1. Foreign iron is not competitive with domestic pig iron on a price basis, but there continues to be an inflow of Dutch and Indian iron for mixture purposes. Dutch iron in the No. 1X and lower silicon grades is quoted at \$21, duty paid, port of entry.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	\$20.91 to \$21.91
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	20.89 to 22.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	21.39 to 23.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	21.89 to 23.52

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

Ferroalloys.—There are a few inquiries for ferromanganese consisting of carload and 100-ton lots, but the market is generally very quiet. Sales of several carloads of spiegeleisen have been made in the past week, most of them at the higher price of \$33, furnace. Specifications on contract are fairly satisfactory.

Finished Steel.—The close of the first half of the year finds this market in a rather spotty condition, the more favorable factors being a rather well sustained seasonal volume of specifications and orders for nearly all products and an unusually large amount of activity in fabricated structural steel. A Manhattan hotel placed during the week will take 12,000 tons of shapes and the volume of pending business has been increased by a department store building for Abraham & Straus in Brooklyn, which may require as much as 20,000 tons, a fifty-eight-story apartment building in Tudor City, New York, which will take about 10,000 tons, and another apartment project on the East River, which will take 7000 tons. These bring the prospective tonnage which will probably be placed during the summer for large projects alone well above the 100,000-ton mark. While prices on plain material are not all that might be desired, not much business is being placed at less than 2.14½c., New York, and some small jobs are being taken at figures ranging up to 2.19½c. When fabricated prices are unusually low it is often the fabricator's and not the mill's margin of profit that is reduced. The demand for standard pipe is good and the prices regular. The same might be said for tin plate. Plain wire is quiet, with 2.50c. per lb., Pittsburgh, the ruling price. In the nail market, however, there is weakness, and although some large producers

are quoting 2.65c., Pittsburgh, 2.55c. is being done on a large amount of business. There is little activity in bars and plates and on the latter products some Eastern mills have not opened their third quarter books. It is expected, however, that 1.90c., Pittsburgh, will be quoted by all makers of both plates and bars, with little likelihood of an adequate test for the \$1 advance for several weeks. Weakness in sheet prices continues to be the most unfavorable factor in the market, with quotations at the lowest levels in several years. Not since March, 1916, have black sheets been so low as 2.65c., Pittsburgh, the present ruling price in this territory. Some orders, nevertheless, are being placed at \$1 and occasionally \$2 higher, but the tendency seems toward weakness rather than strength. On the galvanized product, 3.50c., Pittsburgh, now represents the top of the market, with frequent concessions of

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.30c.
Soft steel bars and small shapes	3.25c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.40c.
Plats and squares	3.90c.
Cold-rolled strip, soft and quarter hard	5.15c. to 5.40c.
Hoops	4.50c.
Rands	4.00c.
Blue annealed sheets (No. 10 gage)	3.85c. to 3.90c.
Long terne sheets (No. 24)	5.60c. to 5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.
Machine bolts, cut thread: Per Cent Off List	
¾ x 6 in. and smaller	55 to 60
1 x 30 in. and smaller	50 to 50 and 10
Carriage bolts, cut thread:	
¾ x 6 in. and smaller	55 to 60
¾ x 20 in. and smaller	50 to 50 and 10
Coach screws:	
¾ x 6 in. and smaller	55 to 60
1 x 16 in. and smaller	50 to 50 and 10
Boiler Tubes— Per 100 Ft.	
Lap welded, 2-in.	\$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00
Discounts on Welded Pipe	
Standard Steel—	Black Galv.
1½-in. butt	46 29
¾-in. butt	51 37
1-3-in. butt	53 39
2½-6-in. lap	48 35
7 and 8-in. lap	44 17
11 and 12-in. lap	37 12
Wrought Iron—	
1½-in. butt	5 +19
¾-in. butt	11 +9
1-1½-in. butt	14 +6
2-in. lap	5 +14
3-6-in. lap	11 +6
7-12-in. lap	3 +16
Tin Plate (14 x 20 in.)	
	Prime Seconds
Coke, 100 lb. base box	\$6.45 \$6.20
Charcoal, per box—	A AAA
IC	\$9.70 \$12.10
IX	12.00 14.25
IXX	13.90 16.00
Terne Plate (14 x 20 in.)	
IC—20-lb. coating	\$10.00 to \$11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25
Sheets, Box Annealed—Black, C. R. One Pass	
	Per Lb.
Nos. 18 to 20	3.60c. to 3.80c.
No. 22	3.75c. to 3.95c.
No. 24	3.80c. to 4.00c.
No. 26	3.90c. to 4.10c.
No. 28*	4.05c. to 4.25c.
No. 30	4.30c. to 4.50c.
Sheets, Galvanized	
	Per Lb.
No. 14	4.15c. to 4.35c.
No. 16	4.00c. to 4.20c.
No. 18	4.15c. to 4.35c.
No. 20	4.30c. to 4.50c.
No. 22	4.35c. to 4.55c.
No. 24	4.50c. to 4.70c.
No. 26	4.75c. to 4.95c.
No. 28*	5.00c. to 5.20c.
No. 30	5.40c. to 5.60c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

\$1 and even \$2 a ton. One must also go back 12 years to find this price equaled. Blue annealed sheets apparently have not dropped below 2c., Pittsburgh, although isolated instances are reported when \$2 concessions were obtained. The narrower widths are still commanding 2.10c. in some cases. Strip prices are comparatively firm, with 1.85c., Pittsburgh or Cleveland, the minimum on the hot-rolled product, with a range extending to 2.30c. on the narrower widths. This territory is not compelled to meet the competition of the continuous sheet mills, which have brought out lower prices in some Western districts.

Mill prices per lb., delivered New York: Soft steel bars, 2.19c. to 2.24c.; plates, 2.12½c. to 2.22½c.; structural shapes, 2.14½c. to 2.19½c.; bar iron, 2.14c.

Reinforcing Bars.—The Kalman Steel Co. will furnish 2500 tons of bars on a job for the New York Dock Co. in Brooklyn. Outside of this project, which is one of the largest reported in recent weeks, the market has been rather inactive. The volume of small business is keeping up, but prospective work seems to be rather slow in developing. Prices are unchanged, although the generally quoted mill price of 2c., Pittsburgh, is admittedly weak on attractive tonnages.

Cast Iron Pipe.—Buying is confined to small lots, seldom in excess of 100 tons and principally by private users. Prices are apparently quite firm, with Northern makers maintaining the market at \$37.60 to \$38.60 per net ton, delivered New York, and Southern foundries quoting \$32 to \$33 per ton, base, Birmingham. An inquiry is in the market for the United States marine base at Paris Island, S. C., for 400 tons of 10-in., Class 250, centrifugal cast iron pipe.

Prices per net ton, delivered New York: Water pipe 6-in. and larger, \$37.60 to \$38.60; 4-in. and 5-in., \$42.60 to \$43.60; 3-in., \$52.60 to \$53.60; Class A and gas pipe, \$4 to \$5 extra.

Warehouse Business.—The volume of shipments from stock in June will apparently compare favorably with May, but be smaller than April business, which was about the best since the first of the year. A meeting of jobbers in this district is scheduled for Thursday, at which the differential between the mill and warehouse price will probably be considered. Black and galvanized sheet prices continue to show a range of 3.80c. to 4c. per lb., base, on black and from 4.50c. to 4.70c. per lb., base, on galvanized.

Old Material.—All grades of scrap show a tendency to weakness. No. 1 heavy melting steel has been bought at \$13 per ton, delivered Bethlehem, Pa., the purchase totaling several thousand tons. No. 1 blast furnace scrap has been bought at \$10 per ton, delivered Steelton and Sparrows Point, Md., and \$9.50 per ton, delivered Bethlehem, so that the range of dealers' buying prices is \$9 to \$9.50 per ton, delivered. Recent purchases of yard grade of heavy melting steel have been at \$10.50 per ton, and dealers are offering \$10 per ton, delivered, except to Conshohocken, Pa., for which \$10.50 to \$11 per ton is paid.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel.....	\$9.50 to \$9.85
Heavy melting steel (yard).....	6.25 to 7.00
No. 1 heavy breakable cast.....	11.00 to 12.00
Stove plate (steel works).....	7.00 to 7.25
Locomotive grate bars.....	7.00 to 7.50
Machine shop turnings.....	6.00 to 6.50
Short shoveling turnings.....	6.00 to 6.50
Cast borings (blast furnace or steel works).....	6.00 to 6.50
Mixed borings and turnings.....	6.00 to 6.50
Steel car axles.....	14.50 to 15.00
Iron car axles.....	23.75 to 24.75
Iron and steel pipe (1 in. dia., not under 2 ft. long).....	8.25
Forge fire.....	6.50 to 6.75
No. 1 railroad wrought.....	9.50 to 10.00
No. 1 yard wrought, long.....	8.00 to 8.50
Rails for rolling.....	10.00 to 10.50
Cast iron carwheels.....	11.00 to 11.50
Stove plate (foundry).....	8.50 to 9.00
Malleable cast (railroad).....	10.00
Cast borings (chemical).....	10.75 to 11.25

Prices per gross ton, delivered local foundries:

No. 1 machinery cast.....	\$14.00 to \$15.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	12.00 to 13.00
No. 2 cast (radiators, cast boilers, etc.).....	11.50 to 12.50

Coke.—Operations in the Connellsville district have been curtailed to 20 to 25 per cent of the total capacity, but prices of both foundry and furnace grades continue unchanged at about \$3.50 per ton, Connellsville, for standard foundry and \$2.50 to \$2.75 per ton, Connellsville, for furnace coke. Special brands of foundry

coke are quoted at \$4.85, f.o.b. ovens, and delivered prices are: To northern New Jersey, Jersey City and Newark, \$8.56 per net ton; to New York and Brooklyn, \$9.44 per net ton. By-product foundry coke is unchanged at \$9 to \$9.40 per net ton, Newark or Jersey City, and from \$10.06 to \$10.29 per net ton, New York or Brooklyn.

Cleveland

Firm Effort to Get Advance on Heavy Products But Weakness in Others

CLEVELAND, June 26.—Mills outside of this territory appear to be taking a firm stand on the establishment of a 1.90c. price on steel bars, plates and structural material for the third quarter, but so far have made little effort to close contracts. However, a few small contracts have been taken at the advance. Some of the smaller mills are holding back, awaiting the final test of the price advance. A few consumers have made unsuccessful efforts to extend existing contracts into the third quarter. With only four days remaining in the present quarter, there has been no rush to get in specifications on the expiring 1.85c. contracts, although some mills report a slight gain in specifications. Local mills have taken some steel bar business for third-quarter shipment at the current price of 1.85c., mill, and an Ohio mill is quoting forging bars at 1.90c. for the third quarter. While mills are holding to the advance on the heavier rolled products, new weakness has developed in some other lines. Cold-finished steel bars have declined \$2 a ton and some makers have made a similar concession on cold-rolled strip. While orders from the automotive industry have declined, the demand from this source for sheets and strip steel is unusually well maintained for this season. Some of the Michigan automobile plants have greatly reduced production and others have shut down two weeks for inventories and changes in models. However, motor car builders are ordering considerable steel for July shipment. Structural inquiry is light in this territory, the only good inquiry pending being for grade crossing elimination work in connection with the Cleveland Union Terminal project. It has developed that the inquiry reported last week in this connection involves only a portion of the work taking 8000 tons. The remainder will come out a little later.

Iron Ore.—The ore market is very dull, sales being limited to an occasional small lot. The consumption of Lake ore during May was 4,947,768 tons, an increase of 166,553 tons over April and comparing with 5,012,782 tons in May last year. On June 1 there was 13,742,157 tons of ore on hand at furnaces. The amount at furnaces and at Lake Erie docks on that day was 18,876,721 tons, as compared with 22,970,576 tons on the same date a year ago. Central district furnaces in May consumed 2,474,325 tons, an increase of 109,546 tons for the month. Lake front furnaces used 2,272,222 tons, a gain of 51,966 tons. All rail furnaces used 122,959 tons, a gain of 3738 tons and Eastern furnaces, 78,262 tons, an increase of 1213 tons. There were 173 furnaces using Lake ore in blast May 31, or an increase of 5 for the month.

Pig Iron.—The market became more active the past week, during which Cleveland interests sold 38,500 tons of foundry and malleable iron. The business was widely distributed geographically and by industries and in-

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Soft steel bars.....	3.00c.
Reinforcing steel bars.....	2.25c. to 2.75c.
Cold-finished rounds and hexagons.....	3.65c.
Cold-finished flats and squares.....	4.15c.
Hoops and bands.....	3.65c.
Cold-finished strip.....	5.95c.
Black sheets (No. 24).....	3.75c.
Galvanized sheets (No. 24).....	4.40c. to 4.50c.
Blue annealed sheets (No. 10).....	3.25c.
No. 9 annealed wire, per 100 lb.....	\$2.85
No. 9 galvanized wire, per 100 lb.....	3.30
Common wire nails, base per keg.....	2.85

*Net base, including boxing and cutting to length.

cluded both early shipment and third-quarter tonnage. Some of the orders were for lots of 3000 to 4000 tons. They came in part from automobile foundries that had been rather slow in making third-quarter contracts. Prices are holding closely to recent levels with a Lake furnace range of \$16.25 to \$17 for foundry and malleable iron, except for Michigan delivery, for which \$17.50, furnace, is being quoted. There was a limited amount of buying in Cleveland at the recently reduced price of \$17.50, furnace. Efforts are being made to get \$18 for small lots. Shipments this month are expected to show a slight gain over May. While the demand from the automotive industry has slackened, this seems to have been more than offset by larger shipping orders from other industries. Shipments are good to stove and furnace manufacturers and to pump makers. The demand from jobbing foundries is rather slow.

Prices per gross ton at Cleveland:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	\$18.00 to \$18.50
Southern fdy., sil. 1.75 to 2.25	21.50
Malleable	18.00 to 18.50
Ohio silvery, 8 per cent.	28.00
Basic Valley furnace	15.35 to 15.50
Standard low phos., Valley furnace	26.50

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

Strip Steel.—Price irregularities on cold-rolled strip have developed with concessions of \$2 a ton to 2.65c., Cleveland, for 3 tons or over by two or more mills. Some third-quarter business has been taken at the reduction. Fender stock is unchanged at 4.10c. Most consumers of hot-rolled strip have covered for the third quarter at the same prices that they had for this quarter, or 1.75c., Pittsburgh, for 6-in. and wider material and 1.85c. for 3-in. to 6-in. strip, or \$3 a ton below regular quoted prices. Specifications are fairly good.

Cold-Finished Steel Bars.—Makers have reduced prices \$2 a ton to 2.10c., Pittsburgh, and 2.15c., Cleveland. The reduction was unexpected and is understood to have resulted from a concession made by one producer to a large Michigan automobile company. Following the reduction most consumers have placed third-quarter contracts at the new price and specifications against second-quarter contracts are being accepted at the lower price. Specifications are very satisfactory.

Wire Products.—While some third-quarter nail contracts have been taken at 2.65c., Cleveland, a 2.55c. price still applies to the large jobbing trade. Wire is firm at 2.50c.

Reinforcing Bars.—The regular price on billet steel bars is not being firmly held in this territory and rail steel bars are being affected by the competitive situation. While the latter are still quoted at 1.75c. mill, this will be shaded \$1 a ton on a fair inquiry.

Warehouse Business.—Sales are fair and June business may show a slight gain over May. Consumers are getting such prompt mill deliveries that many do not feel it necessary to buy from jobbers. Galvanized sheets have become more active. Sheet prices are irregular. Other prices are firm.

Semi-Finished Steel.—Shipments are still being made at \$32.50 to \$33, Cleveland, for sheet bars and \$33 for billets and slabs. While prices that will apply against third-quarter specifications have not been definitely announced, there is no expectation that they will be any higher.

Sheets.—Current orders are light and few consumers are showing an interest in third-quarter contracts. Keen competition has brought out concessions from recent minimum prices on blue annealed and galvanized sheets. On the former a 1.85c. Pittsburgh price came out on a good lot inquiry for material that meets continuous mill competition. However, 1.90c. is the usual minimum quotation. On galvanized sheets 3.45c., Valley, is being quoted and in one case as low as 3.40c., Valley, although some business is being taken at 3.50c., Pittsburgh. Black sheets range from 2.60c. to 2.70c., Pittsburgh. Auto-body sheets are firm.

Fluorspar.—The output of gravel fluorspar has been reduced somewhat by the shutting down of mines, including one Kentucky mine that has been producing 18,000 tons a year and from which all the material has been taken. As a result the supply is less plentiful than recently and this has given the market a firmer

tone. Sales are limited to car lots, as most consumers are under contract.

Alloy Steel.—While specifications have fallen off sharply, being now about 50 to 60 per cent of mill capacity, the demand is about normal for this season. Most consumers have placed contracts for the third quarter at the quoted prices.

Bolts, Nuts and Rivets.—Bolts and nuts are moving in fair volume. Rivet orders are rather irregular. Third-quarter contracts are coming in well.

Coke.—The present price of Ohio by-product foundry coke has been re-established at \$7.75 per ton, Painesville. Specifications are fair, but there is not much new business. Connellsville foundry coke is unchanged at \$3.50 to \$4.85, ovens.

Old Material.—The curtailment in mill operations is being reflected in a little slowing down of orders for scrap shipments against contracts. Prices on steel-making grades are holding to recent quotations. However, the market has a rather weak tone and blast furnace scrap is being freely offered at \$9.25, the higher quotation having virtually disappeared. There is no new demand from the mills. July scrap lists issued by the Michigan automobile companies are fairly large in spite of the slowing down of the automotive industry, these lists including Chevrolet, 4650 tons; Buick, 3800 tons; Dodge Brothers, Inc., 2800 tons; Chrysler, 2700 tons.

Prices per gross ton, delivered consumers' yards:

Basic Open-Hearth Grades

No. 1 heavy melting steel	\$13.00 to \$13.25
No. 2 heavy melting steel	12.50 to 12.75
Compressed sheet steel	12.50 to 13.00
Light bundled sheet stampings	11.50 to 11.75
Drop forge flashings	11.50 to 11.75
Machine shop turnings	6.50 to 6.75
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	13.50 to 13.75
No. 1 busheling	11.00 to 11.25
Pipes and flues	9.00 to 9.50
Steel axle turnings	12.50 to 13.00

Acid Open-Hearth Grades

Low phosphorus forging crops	16.50 to 17.00
Low phosphorus, billet, bloom and slab crops	17.00 to 17.50
Low phosphorus sheet bar crops	16.50 to 17.00
Low phosphorus plate scrap	16.00 to 16.50

Blast Furnace Grades

Cast iron borings	9.25 to 9.50
Mixed borings and short turnings	9.25 to 9.50
No. 2 busheling	9.25 to 9.50

Cupola Grades

No. 1 cast	16.25 to 16.75
Railroad grate bars	11.00 to 12.00
Stove plate	12.00 to 12.50
Rails under 3 ft.	16.75 to 17.25

Miscellaneous

Railroad malleable	15.00 to 15.50
Rails for rolling	16.25 to 16.50

Little Activity in Detroit Scrap

DETROIT, June 26.—There has been very little activity in the market on old material the past week and no strengthening factors are in sight. Prices are quoted without change.

Dealers' buying prices per gross ton f.o.b. cars, Detroit:

Heavy melting and shoveling steel	\$11.00 to \$11.50
Borings and short turnings	7.00 to 7.50
Long turnings	5.75 to 6.25
No. 1 machinery cast	14.00 to 15.00
Automobile cast	19.00 to 20.50
Hydraulic compressed sheets	9.75 to 10.25
Stove plate	11.00 to 12.00
No. 1 busheling	8.50 to 9.00
Sheet clippings	6.00 to 6.50
Flashings	9.00 to 9.50

Plan for 1929 Machine Tool Exposition

With the recent appointment of a committee of five members, active planning of the details of the machine tool exposition, to be held in the fall of 1929 under the auspices of the National Machine Tool Builder's Association, has begun. J. Wallace Carrel, vice-president and general manager of the Lodge & Shipley Machine Tool Co., Cincinnati, is chairman of the committee. The other members are Henry Buker, vice-president Brown & Sharpe Mfg. Co., Providence; R. E. Flanders, manager Jones & Lamson Machine Co., Springfield, Vt.; R. M. Gaylord, vice-president Ingersoll Milling Machine Co., Rockford, Ill.; and James E. Gleason, president Gleason Works, Rochester, N. Y.

San Francisco

Larger Lettings of Structural Steel and Concrete Bars—Plate Demand Light

SAN FRANCISCO, June 23 (By Air Mail).—Consumers of iron and steel on the Pacific Coast are showing little interest in third quarter requirements and, as a result, both sales and inquiries have fallen off. The structural steel market is the most active one, and outstanding awards include 1700 tons for the Medico-Dental Building at Spokane, Wash., booked by the Hofius Steel & Equipment Co., and 1125 tons for the Kettle Falls, Wash., bridge, placed with the United States Steel Products Co.

During the first 12 days of June, Los Angeles building permits numbered 1276, with an estimated valuation of \$4,580,907, as compared with 1280 permits and a valuation of \$4,174,175 for the corresponding period in 1927. So far this year permits aggregate \$47,393,043, compared with \$53,011,977 for the same period last year.

Pig Iron.—Demand for foundry pig iron has shown no improvement, and few inquiries and sales are reported. Stocks on hand in foundry yards are apparently sufficient to take care of immediate requirements. Prices are unchanged.

Prices per gross ton at San Francisco:

*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25	24.00 to 25.00
**German foundry, sil. 2.75 to 3.25	24.25

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Bars.—Reinforcing steel awards were heavier this week and totaled slightly over 1000 tons, compared with less than 600 tons for the previous two weeks. The largest letting called for 485 tons for a penstock, powerhouse and dam at Eugene, Ore., and was placed with an unnamed interest. Pending business is not heavy, the bulk of the inquiries involving lots of less than 70 tons each. Bids will be opened on July 16 for 2288 tons for Drainage Improvement District No. 26 at Los Angeles. A school at Seattle will require 300 tons, bids having gone in. Little improvement in the out-of-stock price in the San Francisco district is noted, and 1.80c. to 2c. per lb., base, continues to represent the range.

Plates.—The only award of the week was 575 tons for a carfloat for the Santa Fe Railroad at San Francisco, and was placed with the Moore Drydock Co. Awards so far this year are one-third less than the total for the corresponding period last year, aggregating less than 16,000 tons. Sacramento, Cal., will open bids next week on 100 tons of 3/16-in. plates for a 24-in. riveted pipe line. Prices are weak and, as little tonnage is being offered, the market has not yet been tested. Mill quotations range from 2.25c. to 2.30c., c.i.f. Coast ports.

Shapes.—Demand for structural material is well sustained, and awards this week were the heaviest in over a month. In addition to tonnages reported above, the Llewellyn Iron Works secured 900 tons for a factory for the Illinois, Pacific Glass Co. at Vernon, Cal., and the Baker Iron Works took 470 tons for an apartment in Los Angeles. New inquiries include 450 tons for a clinker storage building for the Pacific Coast Cement Co. at Seattle and 350 tons for an apartment in Los Angeles. Plain material from mill continues unchanged at 2.35c., c.i.f.

Cast Iron Pipe.—Only one cast iron pipe award of

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.15c.
Soft steel bars	3.15c.
Small angles, 7/8-in. and over	3.15c.
Small angles, under 7/8-in.	3.55c.
Small channels and tees, 3/4-in. to 2 1/4-in.	3.75c.
Spring steel, 1/4-in. and thicker	5.00c.
Black sheets (No. 24)	4.95c.
Blue annealed sheets (No. 10)	3.90c.
Galvanized sheets (No. 24)	5.50c.
Structural rivets, 1/2-in. and larger	5.65c.
Common wire nails, base per keg	\$3.40
Cement coated nails, 100-lb. keg	3.40

over 100 tons was reported this week. Los Angeles placed 1260 tons of 20-in. Class B pipe with the Grinnell Co. and 884 tons of 6 to 12-in. Class 250 pipe with the American Cast Iron Pipe Co. C. G. Claussen & Co., Inc., was low bidder on 300 tons of 4 to 10-in. Class B pipe for Burbank, Cal., and quoted on French pipe. Bids open on July 6 at Seattle, Wash., for 271 tons of 48-in. Class B pipe for a sewer project on West Hanford Street. San Diego, Cal., will open bids next week on 102 tons of 4 and 6-in. Class B pipe for the improvement of Market Street. Wells, Nev., has received bids on 224 tons of 4 to 10-in. Class C pipe, but may decide to purchase ingot iron riveted pipe.

Steel Pipe.—Inquiries are small. Activity in the oil fields in the southern part of California has not increased, and, from present indications, there is little likelihood of large tonnages coming out for figures in the next two or three months.

Coke.—The quiet condition reported in the market for pig iron is also found in the market for foundry coke, and sales and inquiries continue to cover small tonnages.

St. Louis

Award of 3000 Tons of Concrete Bars for Warehouse—Pig Iron More Active

ST. LOUIS, June 26.—Third quarter buying of pig iron developed during the week. In addition to several large sales, a number of inquiries are pending. Shipments are being well maintained, and the melt is being increased among foundries catering to the stove and agricultural implement trade. The St. Louis Gas & Coke Corporation sold 1300 tons of foundry grades to a northern Illinois stove plant, 1000 tons to another northern Illinois industry and 500 tons to an Indiana melter, all for third quarter shipment, while prompt shipment sales included 300 tons of malleable to a Chattanooga, Tenn., melter, 150 tons of foundry to a Tulsa, Okla., user and 100 tons of foundry to a Denver company. Prices are unchanged.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b.	
Granite City, Ill.	\$19.00
Northern No. 2 fdy., delivered	
St. Louis	20.16
Southern No. 2 fdy., delivered	19.92
Northern malleable, delivered	20.16
Northern basic, delivered	20.16

Freight rates: 81c. from Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

Coke.—Buying of domestic grades of coke is light, and by-product ovens are urging dealers and apartment house owners to place their orders now. The present price of domestic is \$11 a ton, delivered St. Louis, and \$6.75 at the ovens. The present price of foundry coke is \$9.75, delivered St. Louis, and \$9 at the ovens. New prices are expected to be announced on July 1.

Finished Steel.—The award of 3000 tons of reinforcing bars for the J. C. Penney Co. warehouse to the

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, soft steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
Black sheets (No. 24)	4.45c.
Galvanized sheets (No. 24)	5.25c.
Blue annealed sheets (No. 10)	3.60c.
Black corrugated sheets (No. 24)	4.50c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.75c.
Boiler rivets	3.75c.

Per Cent Off List

Tank rivets, 7/8-in. and smaller, 100 lb. or more	70
Less than 100 lb.	65
Machine bolts	60
Carriage bolts	60
Lag screws	60
Hot-pressed nuts, squares, blank or tapped, 200 lb. or more	60
Less than 200 lb.	50
Hot-pressed nuts, hexagons, blank or tapped, 200 lb. or more	60
Less than 200 lb.	50

Laclede Steel Co. and the Missouri Rolling Corporation was the largest concrete bar purchase in some time. A 350-ton reinforcing bar order for a sewer also went to the latter company. There is pending 500 tons of concrete bars for a building for the American Railway Express, which also will require 1000 tons of structural steel. Manufacturers of farm equipment requiring galvanized sheets are active and the improvement in buying, as reported by the Granite City Steel Co., has been sufficient to cause that company to operate its galvanizing department at 75 per cent of capacity this week. The price situation is more stable. Business in blue annealed sheets is slow. Tin plate is in very good demand, and local operations on tin plate are at 100 per cent.

Old Material.—The market is quiet and some items are lower. Dealers have covered almost all of their contracts, and mills have indicated no desire to buy soon. Prices are up 50c. a ton on iron car axles, for which the demand, although not very large, is greater than the supply. Steel angle bars and railroad malleable have declined 25c. a ton. Railroad lists include: Union Pacific, 7500 tons; Chicago, Burlington & Quincy, 4500 tons; St. Louis-San Francisco, 1000 tons of miscellaneous scrap and nine carloads; Nickel Plate, 27 carloads; Mobile & Ohio, 26 carloads.

Dealers' buying prices, per gross ton, f.o.b. St. Louis district:

Heavy melting steel.....	\$11.00 to \$11.50
No. 1 locomotive tires	12.00 to 12.50
Heavy shoveling steel.....	11.00 to 11.50
Miscellaneous standard-section rails, including frogs, switches and guards, cut apart.....	12.25 to 12.75
Railroad springs	13.50 to 14.00
Bundled sheets	8.50 to 9.00
No. 2 railroad wrought	11.25 to 11.75
No. 1 busheling	9.75 to 10.25
Cast iron borings	9.00 to 9.50
Iron rails	13.00 to 13.50
Rails for rolling	13.00 to 13.50
Machine shop turnings	7.00 to 7.50
Steel car axles	17.50 to 18.00
Iron car axles	25.50 to 26.00
Wrought iron bars and transoms	19.00 to 19.50
No. 1 railroad wrought.....	10.00 to 10.50
Steel rails, less than 3 ft.....	15.00 to 15.50
Steel angle bars.....	11.75 to 12.25
Cast iron carwheels	13.25 to 13.75
No. 1 machinery cast	13.00 to 13.50
Railroad malleable	11.25 to 11.75
No. 1 railroad cast	13.00 to 13.50
Stove plate	11.00 to 11.50
Agricultural malleable	12.00 to 12.50
Relaying rails, 60 lb. and under..	20.50 to 23.50
Relaying rails, 70 lb. and over..	26.50 to 29.00

Birmingham

Foundry Pig Iron Reduced to \$15.50— Mill Operations Maintained

BIRMINGHAM, June 26.—Pig iron producers reduced prices 50c. a ton on June 20 and are now quoting No. 2 foundry iron at \$15.50, Birmingham. The reduction has stimulated interest in the market, and a fair tonnage has been booked. Although no real buying movement has developed, some consumers are covering their third quarter requirements, while others are buying through July and August. Most of the third quarter output of furnaces, however, is yet to be sold. Shipments continue active. The Tennessee company was scheduled to blow in one of its new furnaces at Fairfield, Ala., the early part of this week. The stack has a capacity of 600 tons per day. Otherwise furnace operations are unchanged, 18 being in blast. Of this number 10 are on foundry, six on basic, one on recarburizing iron and one on ferromanganese.

Prices per gross ton f.o.b. Birmingham district furnaces:

No. 2 foundry, 1.75 to 2.25 sil.....	\$15.50
No. 1 foundry, 2.25 to 2.75 sil.....	16.50
Basic	\$15.00 to 16.00

Finished Steel.—The market continues active in most lines, and forward bookings show a slight margin of increase over those of the previous week. Inquiries are favorable. Prices are steadier, with plates, shapes and soft steel bars now being quoted at a flat price of 2.05c. per lb., base Birmingham. Structural steel fabricators and bar manufacturers report light bookings, though inquiries are fair. Plant operations are well sustained. No change has been made in the number of active open-hearth furnaces during the past week,

16 being in operation. Of this number, the Tennessee company is working 12 and the Gulf States Steel Co. four.

Cast Iron Pipe.—Pressure-pipe buying was off slightly during the week. Orders were placed with the United States Cast Iron Pipe & Foundry Co. for about 2000 tons for Rock Hill, N. C., and 400 tons for Miami, Fla. Inquiries are light. However, some good-sized projects are to be up for figures within the next six or eight weeks. Shipments are active. Prices continue fairly firm at \$32 to \$33 per net ton, Birmingham, for 6-in. and larger diameters. Soil pipe business is up to normal for this season. A controlling interest in the National Cast Iron Pipe Co. was sold last week to James B. Clow & Sons, Chicago. The local company will retain its corporate identity.

Coke.—The market, as a whole, is dull. A few more orders have been booked for the last half and, to a large extent, the requirements for that period have now been covered. Pitch coke shipments aggregating about 1000 tons are under way to points on the coast of France. By-product coke is being shipped from time to time for California points. Foundry coke quotations are still \$5 per net ton, Birmingham, on both spot and contract business.

Old Material.—Demand is lacking in all lines and current transactions are hardly worthy of mention. Quotations have been unchanged during the past two weeks and are only nominal in view of unusual dullness of the market.

Prices per gross ton delivered Birmingham district consumers' yards:

Heavy melting steel.....	\$8.50 to \$9.00
Scrap steel rails.....	11.00 to 11.50
Short shoveling turnings.....	7.50 to 8.00
Cast iron borings.....	8.00
Stove plate	13.50
Steel axles	19.00 to 20.00
Iron axles	20.00 to 21.00
No. 1 railroad wrought	10.00 to 10.50
Rails for rolling	13.00
No. 1 cast	14.25
Tramcar wheels	12.50 to 13.50
Cast iron carwheels	12.00 to 13.00
Cast iron borings, chemical....	13.50 to 14.00

Canada

Canadian Pacific Buys 25,000 Tons of Rails—Good Demand for Building Steel

TORONTO, ONT., June 26.—Advance buying is beginning to develop in the Canadian pig iron markets. Several good-sized contracts have been closed for third quarter delivery. Local blast furnace representatives report a large volume of third quarter inquiries, calling for 300 to 2000 tons each. Spot sales continue good both in the Toronto and Montreal districts. Individual orders run from 50 to 200 tons, with occasional sales of as much as 500 tons. Water transportation is being featured in some contracts and delivery on this account is steadily becoming more popular. In keeping with the larger demand for pig iron in this country, production has advanced to the highest point since 1920, with eight blast furnaces active, or 63 per cent of total Canadian capacity. Stacks in blast include: Sault Ste. Marie, Ont., three; Hamilton, Ont., two; Port Colborne, Ont., one; Sydney, N. S., two. Canadian pig iron prices are unchanged.

Prices per gross ton:

Delivered Toronto	
No. 1 foundry, sil. 2.25 to 2.75....	\$23.10 to \$23.60
No. 2 foundry, sil. 1.75 to 2.25....	23.10 to 23.60
Malleable	23.10 to 23.60
Delivered Montreal	
No. 1 foundry, sil. 2.25 to 2.75....	24.50 to 25.00
No. 2 foundry, sil. 1.75 to 2.25....	24.50 to 25.00
Malleable	24.50 to 25.00
Basic	23.50 to 24.00
Imported Iron at Montreal Warehouse	
Summerlee	33.50
Carron	33.00

Rails.—The Canadian Pacific Railway has placed an order with the Algoma Steel Corporation, Sault Ste. Marie, Ont., for 25,000 tons of 100-lb. rails, with rail fastenings, etc. The Canadian National Railways have announced that they will purchase this year 160,000 tons of rails, with necessary fastenings, to cost approximately \$9,000,000. At the present time rail

mills at Sault Ste. Marie, Ont., and Sydney, N. S., have sufficient business on hand to keep them busy for a month or six weeks, and it is expected that the Canadian National orders will be awarded in time to assure continued operations almost to the end of the year.

Structural Steel.—While structural steel workers and employers have not entirely reached an agreement, men are back to work on a number of the larger structures in this city and it is expected that a final settlement will be reached shortly. Shipments of shapes are again being made against old contract, and buying has been resumed. A strong demand is reported for reinforcing bars throughout Ontario. For the MacLean Publishing Co. building addition, Toronto, 1500 tons of structural steel and 500 tons of reinforcing bars will be purchased within a few days; inquiries are also out for lots ranging from 200 to 1000 tons, which aggregate close to 15,000 tons for Toronto and Montreal alone.

Old Material.—Reductions recently announced in the Montreal market did not strengthen demand to any marked degree, but the advance in wrought iron and steel axles, carwheels and stove plate brought these grades into more prominence. In the Toronto district, dealers report a steady flow of small-tonnage orders; in addition inquiry is increasing for third quarter delivery and a few contracts have been closed. Old material prices are unchanged since a week ago.

Dealers buying prices:

	Per Gross Ton	
	Toronto	Montreal
Heavy melting steel	\$9.00	\$7.00
Rails, scrap	10.00	9.00
No. 1 wrought	9.00	11.00
Machine shop turnings	7.00	5.00
Boiler plate	7.00	6.00
Heavy axle turnings	7.50	6.50
Cast borings	7.50	5.00
Steel turnings	7.00	5.50
Wrought pipe	5.00	5.00
Steel axles	14.00	20.00
Axles wrought iron	16.00	22.00
No. 1 machinery cast .....	.....	16.00
Stove plate .....	.....	13.00
Standard carwheels .....	.....	16.00
Malleable .....	.....	13.00
	Per Net Ton	
No. 1 machinery cast	15.00	.....
Stove plate .....	.....	9.00
Standard carwheels	13.00	.....
Malleable scrap	13.00	.....

Youngstown

Mill Operations Hold Around 70 Per Cent—Basic Iron Is Higher

YOUNGSTOWN, June 26.—The pace of steel buying and of plant operations does not vary much with manufacturers in this district. Steel ingot production at the outset of the month was around 70 per cent of capacity, and that is approximately the rate in the final week of the month. The automotive industry continues to take steel fairly freely, being one of the principal factors in the comparative steadiness of steel works engagement. Another sustaining influence is the good rate of operation of steel fabricating and stamping companies located in the district and depending entirely on local mills for their steel. Other important consuming industries, notably the oil fields, are not contributing as heavily as usual to the order books of the mills, although one of the local steel pipe makers is reported to be figuring on a gas pipe line, which, if ordered, will give pipe mill operations a brighter aspect. The needs in this line is said to amount to 50,000 tons, which would provide a good backlog for the maker understood to have the inside track on the order.

From the standpoint of bookings the pipe situation is the weakest of any of the products of the district. While hopes are revived by even the slightest signs of betterment in the oil industry, the fact remains that, outside of the California field, drilling is very light and in California the activities are chiefly deep drilling for the tapping of secondary wells. Only one such well is being sunk, whereas in former years it was common for as many as 100 wells to be in process of drilling in a field at one time. For drilling these deep wells, seam-

less casing is almost exclusively used and most of the pipe-making capacity of the district is for making welded pipe. A report that the advance in standard-weight and line pipe prices announced early in April is not being maintained is denied by local producers.

Bar business for local mills is at best only moderately active. Some third quarter contract business has been taken at 1.90c., base Pittsburgh, but, in view of the fact that current business is not readily obtained at more than 1.85c., base, and that rather than run the risk of losing specifications on existing contracts carrying that price some producers are extending second quarter contracts into the third quarter, doubts are expressed that the higher price can be established. In view of the reduction of \$2 a ton on cold-finished steel bars, there is bound to be resistance on the part of makers to paying any higher price for hot-rolled bars.

Leading producers of black sheets here are holding to a minimum of 2.70c., base, and, while admitting that they are encountering lower prices, declare that 2.65c. or less usually refers to sales of special finishes carrying substantial extras that are profitable enough to make possible a reduction in the base price. On galvanized sheets 3.50c., base, is the common quotation but is not as low as some sales are being made. Hot-rolled strips are quoted at 1.90c., base, for 6-in. to 12-in. widths; 2.10c., base, for 3-in. to 6-in., and 2.20c., base, for less than 3-in. These prices, however, prevail on most sales, but on tonnage the large buyers still get concessions of \$2 to \$3 a ton, and even more if the net prices quoted on round lots of wide and narrow material were translated to a base price.

Efforts to stiffen the price of basic iron have met with some success, one fair-sized lot having been sold to an Ohio Valley steel maker at \$15.75, Valley furnace, which represents an advance of 40c. a ton over the last previous sale. On this inquiry most producers quoted \$16, Valley furnace. Local producers are not hopeful of getting any of the iron for the Follansbee Brothers Co. on account of lower freight charges enjoyed by Pittsburgh and Wheeling district furnaces.

The scrap market here is dull and soft. Heavy melting steel is quotable at \$14.50 and compressed sheets at about 50c. a ton less, a decline of 50c. a ton from what could have been obtained a fortnight ago.

Pacific Northwest

Steel Rate War Looms—Concrete Bar Market Active

SEATTLE, June 23 (By Air Mail).—War threatens in freight rates on iron and steel for shipment to Pacific Coast points, following the action of the Illinois Central Railroad and the Redwood Steamship Lines putting into effect early this month a rate of 61c. from all points in Illinois and Indiana, as well as certain points in Kentucky, to San Francisco, Los Angeles, Alameda, Wilmington and Ashland, Cal. As yet the above rate applies only to the points named in California, and efforts to have the rate apply to all Pacific Coast points have brought a strong protest from Eastern railroads, and the matter is now in the hands of the Interstate Commerce Commission for adjudication.

The Illinois Central has made a rate of 31c. per 100 lb. from the points named above to New Orleans, and from there the Redwood Lines make a rate of 30c. via the Panama Canal to the California points, the same rate that is in effect from Eastern ports to all Pacific Coast points. The Eastern roads have attacked the 31c. rate, claiming it is contrary to law, and the matter is now in the hands of the Interstate Commerce Commission for settlement. If that body should decide that the rate is legal, and also allows it to apply to all Pacific Coast points, a cut in rates by the Eastern railroads, and also possibly by the Pacific Coast steamship lines, is almost certain to take place.

There has been a considerable falling off in new demand for iron and steel in the local market, and prices, too, are showing signs of weakness. Jobbers and consumers are buying only in small lots for immediate needs, and the threatened rate war on shipments of steel products to Pacific Coast points is helping to retard buying in any large quantities.

Plates.—Demand is very light. No large lots have been placed for some time, and no important business is in sight. The price range on plates for mill shipment is from 2.25c. for large lots to 2.30c. per lb. for small lots, c.i.f. Seattle.

Shapes.—The only large order in several weeks was 1620 tons for the Paulson Medico-Dental building, Spokane, Wash., taken by the Hofius Steel Equipment Co., Seattle. The Wallace Bridge & Structural Steel Co. has taken 200 tons for a clinker building for the new plant of the Pacific Coast Cement Co. The Wallace Falls Timber Co. is in the market for 200 tons for a bridge span at Index, Wash. Prices on shapes remain fairly firm at 2.35c. per lb., c.i.f. Seattle.

Pig Iron.—Foundry operations in the Seattle district are slow, and there is little demand for pig iron. Prices on Utah basic and No. 2 foundry are nominal at \$25 to \$26 per gross ton, delivered Seattle.

Rails.—An Eastern mill has taken 200 tons of 85-lb. sections for the Pacific Coast Railroad.

Bars.—There is some activity in reinforcing bars, but merchant bars are quiet. The Pacific Coast Steel Co. has taken 250 tons of reinforcing bars for the West Seattle Public School, 700 tons for the Lovejoy viaduct at Portland, Ore., and 150 tons for the Von Herberg building in Seattle. The Northwest Steel Rolling Mills, Inc., has taken 600 tons for the Peck & Wills warehouse in Seattle, 100 tons for a grain elevator in Vancouver, B. C., about 250 tons for State highway work along the Olympic peninsula and 150 tons for a viaduct at Mount Vernon, Wash. Bids are to be opened on July 6 for about 600 tons for the Beacon Hill tunnel in Seattle. We quote ordinary merchant steel bars at 2.30c. to 2.35c., base, per lb., c.i.f. Coast ports, and reinforcing bars at 2.20c. per lb. for large lots and up to 2.75c. and 3c. for small lots from stock and cut to lengths. Lower than 2.20c. per lb. on large lots is being done at southern California points.

Old Material.—There is little activity in foundry scrap, but there is a fair demand for steel melting scrap. Electric steel melting scrap is bringing \$13 per gross ton, heavy melting steel scrap \$11 per gross ton, and No. 1 cast iron scrap \$12 to \$13 per net ton, all f.o.b. Seattle. A recent sale of 300 tons of electric melting steel scrap was made at \$13 per gross ton, delivered Seattle.

Buffalo

Sheets Weak—Scrap Offered Exceeds Consumption—Heavy Melting Lower

BUFFALO, June 26.—The only sizable pig iron transaction of the week was a sale of 2000 tons of foundry to an Erie, Pa., consumer. A slowing down in miscellaneous small orders was noted, although shipments continue good. The market in this district remains firm at \$17, local furnace, for No. 2 plain, and at \$17.50 for malleable. Eastern business is being quoted at prices figuring lack to \$16.50, Buffalo.

Prices per gross ton, f.o.b. furnace:

No. 2 plain fdy., sil. 1.75 to 2.25.....	\$17.00
No. 2 foundry, sil. 2.25 to 2.75.....	17.50
No. 1X foundry, sil. 2.75 to 3.25.....	18.50
Malleable, sil. up to 2.25.....	17.50
Basic.....	\$16.50 to 17.00
Lake Superior charcoal.....	27.28

Finished Steel.—The trade is quiet, with a fair volume of bars and shapes moving. Some sheet business is being placed, but prices are not so strong as recently. Structural and reinforcing bar lines have slowed down, but action on the material for the 26-story Rand

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Soft steel bars.....	3.30c.
Reinforcing bars.....	2.75c.
Cold-finished flats, squares and hexagons.....	4.45c.
Rounds.....	3.95c.
Cold-rolled strip steel.....	5.85c.
Black sheets (No. 24).....	4.30c.
Galvanized sheets (No. 24).....	5.15c.
Blue annealed sheets (No. 10).....	3.80c.
Common wire nails, base per keg.....	\$3.65
Black wire, base per 100 lb.....	3.90

building in this city is expected soon. Trade in bolts and nuts is fair, and wire mills report good operations and satisfactory bookings.

Old Material.—The market is weaker and less active. The only selling is an occasional car of malleable or No. 1 cast scrap. One of the larger consumers, it is reported, may suspend shipments from dealers for a month, because of heavy receipts of material, much of which is coming by boat. Scrap production is heavy, in excess of what the market will absorb. Railroad lists will close next week. Only two scrap yards in the district are active.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades	
No. 1 heavy melting steel.....	\$14.00 to \$14.50
No. 2 heavy melting steel.....	12.50 to 13.00
Scrap rails.....	13.50 to 14.00
Hydraulic compressed sheets.....	12.50 to 13.00
Hand bundled sheets.....	8.50 to 9.00
Drop forge flashings.....	12.00 to 12.50
No. 1 busheling.....	12.50 to 13.00
Heavy steel axle turnings.....	12.00 to 12.50
Machine shop turnings.....	7.75 to 8.25

Acid Open-Hearth Grades	
Railroad knuckles and couplers.....	15.00
Railroad coil and leaf springs.....	15.00 to 16.00
Rolled steel wheels.....	15.00
Low phosphorus billet and bloom ends.....	16.00 to 16.50

Electric Furnace Grades	
Heavy steel axle turnings.....	12.00 to 12.50
Short shoveling steel turnings.....	10.00 to 10.50

Blast Furnace Grades	
Short shoveling steel turnings.....	10.00 to 10.50
Short mixed borings and turnings.....	9.50 to 10.00
Cast iron borings.....	9.50 to 10.00
No. 2 busheling.....	9.00 to 9.25

Rolling Mill Grades	
Steel car axles.....	15.50 to 16.00
Iron axles.....	12.00 to 12.50
No. 1 railroad wrought.....	12.00 to 12.50

Cupola Grades	
No. 1 machinery cast.....	14.50 to 15.00
Stove plate.....	13.00 to 13.25
Locomotive grate bars.....	11.50 to 12.00
Steel rails, 3 ft. and under.....	16.50
Cast iron carwheels.....	12.00 to 12.50

Malleable Grades	
Industrial.....	15.00
Railroad.....	15.00
Agricultural.....	15.00

Boston

Scrap Prices Weaken as Business Drops—Pig Iron Imports Light

BOSTON, June 26.—A Massachusetts foundry is reported to have purchased 1000 tons of No. 1X iron for third quarter delivery at a price almost equivalent to \$16.50 a ton at Buffalo furnace. Otherwise sales in the past week comprised much smaller tonnages, with the aggregate approximating 4000 tons. Deliveries

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates.....	3.365c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees.....	3.365c.
Zees.....	3.465c.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled.....	4.15c.
Reinforcing bars.....	3.265c. to 3.54c.
Iron bars—	
Refined.....	3.265c.
Best refined.....	4.60c.
Norway round.....	6.60c.
Norway, squares and flats.....	7.10c.
Spring steel—	
Open-hearth.....	5.00c. to 10.00c.
Crucible.....	12.00c.
Tie steel.....	4.50c. to 4.75c.
Bands.....	4.015c. to 5.00c.
Hoop steel.....	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons.....	*3.45c. to 5.45c.
Squares and flats.....	*3.95c. to 6.95c.
Toe calk steel.....	6.00c.
Rivets, structural or boiler.....	4.50c.

Per Cent Off List

Machine bolts.....	.50 and 5
Carriage bolts.....	.50 and 5
Lag screws.....	.50 and 5
Hot pressed nuts.....	.50 and 5
Cold-punched nuts.....	.50 and 5
Stove bolts.....	.70 and 10

*Including quantity differentials.

range from prompt to fourth quarter, and the greater part of the iron sold is bringing the equivalent to \$17 a ton, Buffalo furnace, for No. 2X. Reports that one stack is quoting unusually low prices are not substantiated by sales. There is no doubt, however, that furnaces are willing to shade prices on attractive tonnages, although holding on small lots. There are no open inquiries of importance in the market, and several large consumers who have been sounding out the market have decided to postpone buying, pending an improvement in their business.

Pig Iron Imports.—Low prices quoted on domestic pig irons are holding imports down to a minimum. Imports at this port during the first half of June totaled 396 tons, consisting of 346 tons of Indian and 50 tons of Scotch iron. This compares with 198 tons in the first half of May, this year; 1343 tons in the first half of June, last year; 2538 tons in the first half of June, 1926, and 3030 tons the first half of June, 1925.

Prices of foundry iron per gross ton delivered to most New England points:

Buffalo, sil. 1.75 to 2.25.....	\$20.91 to \$21.91
Buffalo, sil. 2.25 to 2.75.....	21.41 to 22.41
East. Penn., sil. 1.75 to 2.25.....	23.15 to 23.65
East. Penn., sil. 2.25 to 2.75.....	23.65 to 24.15
Virginia, sil. 1.75 to 2.25.....	25.71
Virginia, sil. 2.25 to 2.75.....	26.21
Alabama, sil. 1.75 to 2.25.....	22.41 to 24.27
Alabama, sil. 2.25 to 2.75.....	22.91 to 24.77

Freight rates: \$4.91 from Buffalo, \$3.65 from eastern Pennsylvania, \$5.21 all rail from Virginia, \$6.91 to \$8.77 from Alabama.

Coke.—Only a moderate amount of by-product foundry coke is moving. The melt of New England foundries is barely holding its own. Demand for domestic coke, however, is in large volume, as retail dealers are stocking up heavily. Unseasonably cool and wet weather in the past week helped to swell domestic coke deliveries. It is believed that the Connecticut Coke Co., New Haven, Conn., will start up its new ovens about Sept. 15.

Fabricated Steel.—With labor troubles adjusted and construction resumed, the local fabricated steel market appears more active. Most of the jobs coming up are small ones, however, ranging from 75 tons down to 5 tons. Competition among fabricators is keen. A New Jersey fabricator took 200 tons at Quincy, Mass., at a price approximately 12 per cent under that of the lowest New England bidder.

Warehouse Business.—The movement of material out of warehouses is not as large as it was earlier in June, and considerably less than in May. Despite the slackening of business, prices on domestic stock are generally well maintained. Consumers' interest in imported material is tapering off, owing to unsatisfactory adjustments for rust, etc.

Cast Iron Pipe.—Massachusetts has awarded a contract to the C. & R. Construction Co. for a job calling for 4000 tons of 30-in. pipe, but it is not known what foundry will supply the pipe to the contractor. Beverly, Mass., has let 100 tons of 12-in. pipe to the Warren Foundry & Pipe Co. Marlboro, Mass., is calling for bids July 2 on about 100 tons of pipe, and Chelsea, Mass., will open bids the same day on 100 tons of 6-in. and 8-in. Private business in pipe is only fair, it being the quiet season in the market. Prices on small pipe remain firm, 4-in. at \$45.10 to \$46.10 a ton, delivered common Boston freight rate points, and 6-in. to 12-in. at \$41.10 to \$42.10. Concessions are still of-

fered on larger pipe. The usual \$5 differential is asked on Class A and gas pipe.

Old Material.—A further letdown in both buying and selling has developed, with accompanying weakness in prices. Pennsylvania mills are ordering little scrap, and the local export market has been at a standstill during the week. A steamer will load 5000 tons of steel for Danzig this week, however, and a similar amount is scheduled for shipment in July, which should liven up the market. Steel turnings, steel mill borings, skeleton, mixed borings and turnings and forged scrap are 25c. to 50c. a ton lower than a week ago. Prices on skeleton take a wide range. Material going to certain Pennsylvania points is \$6.50 to \$7 a ton on cars, shipping point, and to other points \$5 to \$5.50. Recent transactions include sales of cotton ties at \$5.50 to \$6 a ton on cars. About 250 tons of scrap rails will be required for the new local plant of the United States Gypsum Co. Buying of textile cast for New England delivery has stiffened prices on that grade.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$8.00 to \$8.50
Scrap T rails	8.00 to 8.50
Scrap girder rails	7.50 to 8.00
No. 1 railroad wrought	9.00 to 9.50
No. 1 yard wrought	7.00 to 7.50
Machine shop turnings	5.25 to 5.50
Cast iron borings (steel works and rolling mill).....	5.25 to 5.50
Bundled skeleton, long.....	5.00 to 7.00
Forge flashings	6.50 to 7.00
Blast furnace borings and turnings	5.00 to 5.50
Forge scrap	5.50 to 6.00
Shafting	12.00 to 12.50
Steel car axles	14.50 to 15.00
Wrought pipe 1 in. in diameter (over 2 ft. long)	7.00 to 7.50
Rails for rolling	9.50 to 10.00
Cast iron borings, chemical....	10.00 to 10.25

Prices per gross ton delivered consumers' yards:

Textile cast	\$13.50 to \$14.00
No. 1 machinery cast	14.00 to 14.50
No. 2 machinery cast	12.50 to 13.50
Stove plate	10.00 to 10.50
Railroad malleable	13.50 to 14.50

Cincinnati

Little Forward Buying Comes with Fall in Southern Pig Iron

CINCINNATI, June 26.—A decline of 50c. a ton in the price of Tennessee and Alabama iron for third-quarter delivery is the outstanding development in the market. While the new schedule of \$15.50, base, Birmingham, has brought out some business, it is not expected to stimulate forward buying to a marked extent, because prices are so weak that there is little likelihood of improvement in the situation during at least the next 60 days. Under the circumstances users find no incentive for anticipating their needs beyond current requirements. Furthermore under the pressure of competition, Northern iron has shown signs indicating a movement toward lower levels and northern Ohio furnaces are reported to be accepting orders in southern Ohio and in Indiana at \$16 to \$16.25, base, furnace. While the newly established quotations of \$15.50, for Southern iron may not serve the purpose of broadening markets at points along and north of the Ohio River, it will insure customers in that territory of their ability to secure iron from the South at as low or possibly lower prices as those to be had from Northern makers. Transactions in the past week have not totaled more than 3000 tons, the largest covering 500 tons of malleable iron to a Springfield, Ohio, company. Aside from an inquiry from the Buick Motor Co. for approximately 2500 tons of 14 to 16 per cent ferrosilicon, pending business is negligible.

Prices per gross ton, delivered Cincinnati:

So. Ohio fdy., sil. 1.75 to 2.25....	\$19.89 to \$20.89
So. Ohio malleable.....	20.14 to 20.89
Alabama fdy., sil. 1.75 to 2.25....	19.19
Alabama fdy., sil. 2.25 to 2.75....	19.69
Tennessee fdy., sil. 1.75 to 2.25..	19.19
Southern Ohio silvery 8 per cent	26.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio, \$3.69 from Birmingham.

Finished Material.—Even though the beginning of the third quarter is close at hand and the new price of

Warehouse Prices, f.o.b. Cincinnati

Base per Lb.

Plates and structural shapes.....	3.40c.
Bars, soft steel or iron.....	3.30c.
New billet reinforcing bars.....	3.15c.
Rail steel reinforcing bars.....	3.00c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons.....	3.85c.
Squares	4.35c.
Black sheets (No. 24).....	4.05c.
Galvanized sheets (No. 24).....	4.90c.
Blue annealed sheets (No. 10).....	3.60c.
Structural rivets	3.85c.
Small rivets .....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base 100 lb. keg.....	2.95
Chain, per 100	7.55

Net per 100 Ft

Lap-welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

(Concluded on page 1859)

NON-FERROUS METAL MARKETS

The Week's Prices	Cents per Pound for Early Delivery	June 24 June 25 June 23 June 22 June 21 June 20					
		Lake copper, New York...	Electrolytic copper, N. Y.*...	Straits tin, spot, N. Y.	Lead, New York.....	Lead, St. Louis.....	Zinc, New York.....
		14.87 1/2	14.87 1/2	14.87 1/2	14.87 1/2	14.87 1/2	14.87 1/2
		14.50	14.50	14.50	14.50	14.50	14.50
		46.25	46.50	46.00	45.62 1/2	46.87 1/2	46.87 1/2
		6.30	6.30	6.30	6.30	6.30	6.30
		6.15	6.15	6.15	6.15	6.15	6.15
		6.50	6.50	6.50	6.50	6.50	6.50
		6.15	6.15	6.15	6.15	6.15	6.15

*Refinery quotation; delivered price 1/4c. higher.

NEW YORK, June 26.—Tin has been the only active market, demand for the other metals being exceedingly light. Price changes have been almost negligible, quotations being firm in all markets except tin.

Copper.—The week has been the quietest in several months. Demand from domestic consumers has been confined to small lots and buying for foreign consumption, which has been heavy for a long time, has tapered off decidedly. Domestic consumers are well covered for July, but a few are buying small lots for nearby shipment. Foreign users will probably have to buy more July metal and there still remains considerable August shipments to be sold both here and abroad. Electrolytic copper for June-July-August delivery is quoted firm at 14.75c., delivered in the Connecticut Valley. Very little is heard of premiums for prompt shipment. The quotation of Copper Exporters, Inc., is unchanged at 15c., c.i.f. European ports. The Lake copper market is quiet, but very firm at 14.87 1/2c., delivered.

Tin.—Sales for the week ended Saturday, June 23, were heavy at not less than 1700 tons. Consumers took some of this metal, but the bulk was absorbed by dealers. June 20 was the most active day with prices higher and sellers shy. Between 400 and 500 tons changed hands. Another good day was June 22 when 400 tons was sold. Yesterday, Monday, was a quiet day with not over 150 tons changing hands. Today the market has been only moderately active with spot Straits tin quoted at 46.25c., New York. Interest in spot tin is more active, but not on a large scale, and

this is taken to indicate that some consumers are not fully supplied. Prices in London today were as follows: Spot standard, £215; future standard, £214 17s. 6d., and spot Straits, £208 per ton. The Singapore price was £209 10s. Arrivals thus far this month have been 4775 tons with 5835 tons reported afloat.

Lead.—Prices are firm and unchanged at 6.15c., St. Louis, in the outside market and 6.30c., New York, as the contract price of the leading interest. Consuming demand is only moderate.

Zinc.—A fair amount of inquiry is reported today, but in general the market is and has been quiet. Prices are unchanged at 6.15c., East St. Louis, or 6.50c., New York, for prime Western, for early delivery, with a slight premium asked for futures. Ore prices are unchanged at \$40, Joplin, at which about 7000 tons changed hands last week. Output is reported at around 11,000 tons. Producers are not forcing sales, and it is generally realized that consumers, not being covered ahead, must soon come into the market.

Nickel.—Quotations for wholesale lots of ingot nickel are unchanged at 35c. with shot nickel at 36c. and electrolytic nickel at 37c. per lb.

Antimony.—In a quiet market Chinese metal is quoted at 9.50c. to 9.75c., New York, duty paid, for all positions.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 23.90c. per lb., delivered.

Non-Ferrous Metals at Chicago

CHICAGO, June 26.—This market is quiet and prices lack strength except in zinc and copper. Prices in the old metals are holding in a dull market.

Prices, per lb., in carload lots: Lake copper, 14.75c.; tin, 50.25c.; lead, 6.25c.; zinc, 6.25c.; in less-than-carload lots, antimony, 12.75c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.75c.; red brass, 9.50c.; yel-

Non-Ferrous Rolled Products

No revisions in the mill prices of bronze, brass and copper products have been reported since May 25. Zinc sheets have not changed since the advance of June 7, and lead full sheets since May 29.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products. Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—
High brass 19.25c.
Copper, hot rolled..... 23.50c.
Zinc 9.25c.
Lead (full sheets)..... 10.00c. to 10.25c.

Seamless Tubes—
High brass 24.12 1/2c.
Copper 25.00c.

Rods—
High brass 17.00c.
Naval brass 19.75c.

Wire—
Copper 16.75c.
High brass 19.75c.
Copper in Rolls..... 22.50c.
Braced Brass Tubing..... 27.25c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide..... 33.00c.
Tubes, base 42.00c.
Machine rods 34.00c.

Metals from New York Warehouse

Delivered Prices Per Lb.

Tin, Straits pig..... 48.50c. to 49.50c.
Tin, bar 50.50c. to 51.50c.
Copper, Lake 15.75c.
Copper, electrolytic 15.50c.
Copper, castings 14.75c.
Zinc, slab 7.25c. to 7.75c.
Lead, American pig..... 7.25c. to 7.75c.
Lead, bar 9.25c. to 10.25c.
Antimony, Asiatic 12.00c. to 12.50c.
Aluminum No. 1 ingots for remelting (guaranteed over 99 per cent pure) 25.00c. to 26.00c.
Aluminum ingots, No. 12 alloy..... 24.00c. to 25.00c.
Babbitt metal, commercial grade..... 30.00c. to 40.00c.
Soldier, 1/2 and 1/2 31.50c. to 32.50c.

Metals from Cleveland Warehouse

Delivered Prices Per Lb.

Tin, Straits pig..... 52.00c.
Tin, bar 56.00c.
Copper, Lake 14.85c.
Copper, electrolytic 14.85c.
Copper, casting 14.00c.
Zinc, slab 7.75c.
Lead, American pig..... 7.10c.
Antimony, Asiatic 16.00c.
Lead, bar 9.50c.
Babbitt metal, medium grade..... 18.50c.
Babbitt metal, high grade..... 55.50c.
Soldier, 1/2 and 1/2 30.75c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.

Sheets—
High brass 19.25c.
Copper, hot rolled..... 24.00c.
Copper, cold rolled, 14 oz. and heavier..... 25.75c.
Seamless Tubes—
Brass 24.12 1/2c.
Copper 25.00c.
Braced Brass Tubes..... 27.25c.
Brass Rods 17.00c.

From New York Warehouse

Delivered Prices, Base Per Lb.

Zinc sheets (No. 9), casks..... 10.00c. to 10.50c.
Zinc sheets, open..... 11.00c. to 11.50c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Consumers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	19.25c.
Copper, hot rolled.....	23.50c.
Copper, cold rolled, 14 oz. and heavier.....	25.75c.
Zinc	10.00c.
Lead, wide	9.75c.
Seamless Tubes—	
Brass	25.62½c.
Copper	26.50c.
Brazed Brass Tubes.....	27.25c.
Brass Rods	17.00c.

low brass, 7.25c.; lead pipe, 4.75c.; zinc, 3.50c.; pewter, No. 1, 30c.; tin foil, 36.25c.; block tin, 45.25c.; aluminum, 12c.; all being dealers' prices for less-than-carload lots.

REINFORCING STEEL

Chicago Mercantile Mart Takes 5000 Tons—Awards of 16,125 Tons

WITH 5000 tons for the Chicago Mercantile Mart, 3000 tons for a warehouse in St. Louis and 2500 tons for a dock building in Brooklyn, awards reported to THE IRON AGE in the last week amounted to 16,125 tons. New projects totaled less than 1900 tons. Awards follow:

STATE OF VERMONT, 400 tons, 15 bridges to various companies.
 BROOKLYN, 2500 tons, building for New York Dock Co., to Kalman Steel Co.
 PHILADELPHIA, 300 tons, building for William Steel & Sons, to Kalman Steel Co.
 CLEVELAND, 100 tons, Jewish hospital, to Pollak Steel Co.
 CHICAGO, 450 tons of rail steel bars, Hyde Park State Bank, to unnamed bidder.
 CHICAGO, 600 tons of rail and billet steel bars, Horder warehouse, to Joseph T. Ryerson & Son.
 CHICAGO, 100 tons, Eleanor Club, to Joseph T. Ryerson & Son.
 CHICAGO, 5000 tons of rail steel bars, Mercantile Mart, to Inland Steel Co.
 CHICAGO, 250 tons, steam tunnels for University of Chicago, to Joseph T. Ryerson & Son.
 ST. LOUIS, 3000 tons, warehouse for J. C. Penney Co.; McAnulty-Klein Co., general contractor, to Laclede Steel Co. and Missouri Rolling Mills Corporation.
 ST. LOUIS, 370 tons, Rocky Branch sewer, to Missouri Rolling Mills Corporation.
 EUGENE, ORE., 485 tons, dam, penstock and power house, to A. Guthrie & Co., Portland.
 PORTLAND, ORE., 700 tons, Lovejoy viaduct, to Pacific Coast Steel Co.
 LOS ANGELES, 225 tons, loft building, 1206 Maple Street, to unnamed interest.
 SACRAMENTO, CAL., 120 tons, Cache Creek bridge, Tulare County, to unnamed interest.
 SEATTLE, 175 tons, loft building, Eighth and Spring Streets, to unnamed interest.
 SEATTLE, 250 tons, West Seattle public school, to Pacific Coast Steel Co.
 SEATTLE, 150 tons, Von Herberg Building, to Pacific Coast Steel Co.
 SEATTLE, 600 tons, Peck & Wills warehouse, to Northwest Steel Rolling Mills.
 STATE OF WASHINGTON, 250 tons, highway work on Olympic peninsula, to Northwest Steel Rolling Mills.
 VANCOUVER, B. C., 100 tons, grain elevator, to Northwest Steel Rolling Mills.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

FALL RIVER, MASS., 300 tons, technical high school.
 CHICAGO, 570 tons, building for Miehle Printing Press Co.
 ST. LOUIS, 500 tons, building for American Railway Express Co., at Union Station.
 SEATTLE, 600 tons, Beacon Hill tunnel.

The C. G. Claussen Co., Inc., has been organized by Carl G. Claussen, formerly Pacific Coast manager for B. Nicoll & Co., New York, to handle the Pont-a-Mousson line of cast iron pipe and fittings in Oregon, Washington, California and the Hawaiian Islands. The main office of the new company has been opened in the Rialto Building, San Francisco, and a branch has been established in the W. M. Garland Building, Los Angeles, in charge of W. S. Conner.

Old Metals, Per Lb., New York

The buying prices represent what the large dealers are paying for miscellaneous lots from the smaller accumulators and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible.....	12.625c.	14.00c.
Copper, heavy and wire.....	12.50c.	13.50c.
Copper, light and bottoms.....	10.75c.	12.00c.
Brass, heavy	7.25c.	8.50c.
Brass, light	6.25c.	7.75c.
Heavy machine composition.....	9.75c.	11.00c.
No. 1 yellow brass turnings.....	8.50c.	9.375c.
No. 1 red brass or composition turnings	9.00c.	10.00c.
Lead, heavy	5.00c.	5.50c.
Lead, tea	4.00c.	4.50c.
Zinc	3.00c.	3.50c.
Sheet aluminum	12.75c.	14.50c.
Cast aluminum	12.50c.	14.00c.

FABRICATED STRUCTURAL STEEL

New York Hotel Award of 12,000 Tons in Total of 38,200 Tons

BOOKINGS of fabricated structural steel reported during the week totaled 38,200 tons, the largest being 12,000 tons for a New York hotel and 3000 tons for a mill building at Rome, Ga. New projects, amounting to 27,900 tons, included 7000 tons for an apartment building in New York and a number of jobs ranging from 1000 to 3000 tons. Awards follow:

BOSTON, 1800 tons, United States Gypsum Co. plant, to New England Structural Co.
 SOMERVILLE, MASS., 350 tons, Boston & Maine Railroad bridge, to Boston Bridge Works, Inc.
 QUINCY, MASS., 200 tons, Granite Trust Co. office building, to Harris Structural Co.
 STATE OF VERMONT, 800 tons, several highway bridges; 200 tons to American Bridge Co. and remainder to several unnamed companies.
 NEW YORK, 12,000 tons, New Yorker Hotel at Eighth Avenue, Thirty-fifth and Thirty-sixth Streets, to American Bridge Co.
 NEW YORK, 760 tons in the following jobs as reported to the Structural Steel Board of Trade, Inc.: Cox bakery, Jamaica, to McClintic-Marshall Co.; Capital Club at 1260 Ocean Avenue, Brooklyn, and school at Bleeker and Vincent Streets, Maspeth, L. I., to George A. Just Co.
 NEW YORK, 500 tons, Tammany Building at Union Square and Seventeenth Street, to Bethlehem Fabricators, Inc.
 SYRACUSE, N. Y., 600 tons, mill building for Hoffmann Machinery Co., to American Bridge Co.
 PHILADELPHIA, 700 tons, State Theater, to Shoemaker Bridge Co.
 PHILADELPHIA, 500 tons, North Broad Street Station, to McClintic-Marshall Co.
 LANCASTER, PA., 500 tons, Fulton National Bank, to Shoemaker Bridge Co.
 PENNSYLVANIA RAILROAD, 200 tons, bridges, to American Bridge Co.
 ROME, GA., 3000 tons, mill building for American-Chatillon Co., to McClintic-Marshall Co.
 DETROIT, 850 tons, Y. W. C. A. building; from F. R. Patterson Construction Co., general contractor, to Massillon Bridge & Structural Co.
 DETROIT, 630 tons, building for Michigan Bell Telephone Co., to Whitehead & Kales Co.
 DETROIT, 967 tons, Fort Road grade crossing separation for Pennsylvania, Wabash and Michigan Central railroads, to unnamed bidder.
 LANSING, MICH., 300 tons, train sheds for Durant Motors, Inc., to Flint Structural Steel Co.
 LANSING, MICH., 177 tons, municipal bridge over Grand River, to American Bridge Co.
 GRAND RAPIDS, MICH., 150 tons, warehouse for Kroger Grocery & Baking Co., to Flint Structural Steel Co.
 STATE OF MICHIGAN, 110 tons, highway bridges, to Massillon Bridge & Structural Co.
 FAIRFIELD, OHIO, 400 tons, Government aerodome, to Pittsburgh-Des Moines Steel Co.
 YORKVILLE, OHIO, 150 tons, plant extension for Wheeling Steel Corporation, to McClintic-Marshall Co.
 AKRON, OHIO, 500 tons, Loew Theater, to Forest City Structural Co.
 LUCAS COUNTY, OHIO, 350 tons, highway bridges, to American Bridge Co.
 SOUTH BEND, IND., 1000 tons, passenger station, to McClintic-Marshall Co.
 CHICAGO, 100 tons, garage at 868 North Clark Street, to Midland Structural Steel Co.
 CHICAGO, 500 tons, St. Michael High School, to New City Iron Works, local.

CHICAGO, 100 tons, building for Interstate Iron & Steel Co., to American Bridge Co.
 CHICAGO, 2700 tons, Harmon sports arena, to Duffin Iron Co.
 NELSON, ILL., 1000 tons, bridge for Chicago & North Western Railroad, to Wisconsin Bridge Co.
 KANSAS CITY, Mo., 110 tons, warehouse for Corn Products Refining Co., to McClintic-Marshall Co.
 SEATTLE, WASH., 200 tons, clinker building for Pacific Coast Cement Co., to Wallace Bridge & Structural Steel Co.
 SPOKANE, WASH., 1600 tons, Paulsen Building, to Hofius Steel & Equipment Co.
 SPOKANE, WASH., 1700 tons, Medico-Dental Building, to Hofius Steel & Equipment Co.
 PULLMAN, WASH., 130 tons, home economics building for Washington State University, to Hofius Steel & Equipment Co.
 EUGENE, ORE., 180 tons, dam, penstock and power house, to A. Guthrie & Co., Portland, Ore.
 SAN FRANCISCO, 800 tons, 525 tons of plates and 275 tons of shapes, carfloat for Santa Fe, to Moore Dry Dock Co.
 LOS ANGELES, 100 tons, factory, Sorenson Lane, to Llewellyn Iron Works.
 LOS ANGELES, 470 tons, apartment building, 5930 Franklin Avenue, to Baker Iron Works.
 LOS ANGELES, 170 tons, garage for Firestone Tire & Rubber Co., to McClintic-Marshall Co.
 VERNON, CAL., 900 tons, factory for Illinois-Pacific Glass Co., to Llewellyn Iron Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

HARTFORD, VT., 200 tons, State bridge.
 NEW YORK, 7000 tons, combination apartment building, warehouse and garage at Forty-eighth and Forty-ninth Streets and East River.
 STATE OF NEW YORK, 500 tons, highway bridges.
 ATLANTIC CITY, N. J., 500 tons, extension to Chalfont-Haddon Hall; alternate bids on arc welded.
 ATLANTIC CITY, 350 tons, Hotel Morton.
 ATLANTIC CITY, 1000 tons, Embassy Theater.
 PHILADELPHIA, 2000 tons, loft building at Eighth and Arch Streets.
 PHILADELPHIA, 1000 tons, apartment building.
 WASHINGTON, 2000 tons, bascule lift section of Arlington Memorial bridge.
 SPARTANBURG, S. C., 1000 tons, mill building; Lockwood, Greene & Co., Inc., engineer.
 LOUISVILLE, KY., 14,000 tons, highway bridge; bids taken July 6.
 PITTSBURGH, 1100 tons, tipples and other construction for Pittsburgh Coal Co.
 MENASHA, WIS., 350 tons, bascule span over Government canal; bids close June 29.
 BLAIR, WIS., 1200 tons, highway bridge.
 DULUTH, 1000 tons, three scows to be built by Marine & Shipbuilding Works, local.
 HARVEY, ILL., 150 tons, building for Bliss & Laughlin, Inc.
 MINNEAPOLIS, 600 tons, Wesley Temple.
 ST. PAUL, 600 tons, building for St. Paul Fire & Marine Insurance Co.
 KANSAS CITY, Mo., 2400 tons, assembly plant for Chevrolet Motor Car Co.
 OMAHA, NEB., 3000 tons, three projects before local fabricators.
 INDEX, WASH., 200 tons, bridge span for Wallace Falls Timber Co.
 OAKLAND, CAL., 170 tons, Niles Canyon bridge; bids July 16.
 SAN FRANCISCO, 170 to 265 tons, Dollar Building addition; bids opened.
 LOS ANGELES, 250 tons, apartment building in Hollywood; bids being taken.
 LOS ANGELES, 350 tons, apartment building, Second Street and Gramercy Place; bids being taken.
 LOS ANGELES, 138 tons, apartment building, 340 South Hobart Street; bids being taken.

The Colorado Fuel & Iron Co., Denver, has adopted group life insurance for all its employees. The Equitable Life Assurance Society, New York, has been named to underwrite the program, which will take effect on July 1 and will probably involve \$20,000,000 of insurance. By this action more than 11,000 employees, located in properties stretching from Wyoming to the Mexican border, are offered \$1,000 to \$2,000 of life and total permanent disability protection, varied according to length of service, at a low cost, by reason of the participation of the company in the premium. This protection also extends to workers employed by subsidiary companies.

Cincinnati Iron and Steel Market

(Concluded from page 1856)

1.90c., base Pittsburgh, is scheduled to go into effect on bars, structural shapes and plates, users are continuing to specify at only a fair rate against old contracts. Whether the effort to secure \$1 a ton more for next quarter's requirements will have the effect of forcing in tonnages at the old price before the end of the month seems doubtful, for consumers are not yet of the opinion that producers will not accept future bookings at 1.85c. However, several district offices of steel companies report that a number of customers have signed new contracts at 1.90c. Despite this favorable development, mills are having difficulty in getting users to commit themselves to the new schedule. The prolonged quietness in the structural steel market in this district has helped to weaken the position of sellers, who are in need of additional tonnages to maintain operations at a satisfactory level. Furthermore, fabricators also are suffering from the scarcity of major jobs and, as a result, their shops have little work ahead. The situation in sheets from the standpoint of prices is worse than a week ago. Mills that have been refusing to sell black sheets at less than 2.75c., base Pittsburgh, have lowered quotations \$2 a ton to 2.65c., but on the higher finishes attractive orders are being booked by several independent producers at concessions of \$2 to \$3 a ton from the accepted base of 2.65c., Pittsburgh. In galvanized sheets, roofing stock is being sold in the South at delivered prices which figure back to 3.30c. to 3.35c., base Pittsburgh. These low quotations have been made by Northern makers who are competing with a Southern mill having a freight advantage to Southern points. Blue annealed has become fairly well stabilized at 1.90c. to 2c., and automobile body stock, at 4c. District sheet companies are operating mills at a rate approaching full capacity, and unfilled orders insure a continuation of the present production schedule for two weeks.

Reinforcing Bars.—The volume of small miscellaneous orders is holding up well, despite the absence of sizable projects. Prices are firm, with new billet bars selling at 1.85c., base Pittsburgh, and rail steel bars at 1.80c., base mill.

Warehouse Business.—Sales continue to maintain a small marginal advantage over those in May, and, unless there should be an unexpected drop in orders the coming week, bookings in June will exceed those of the previous month. Bars and structural steel are the leading products in volume of business. Quotations are showing strength.

Coke.—Shipments of by-product foundry and domestic coke this month are expected to approximate closely those in May. Although no announcement has been made by coke makers, prices during July probably will remain unchanged in both foundry and domestic grades. A local dealer has sold 8000 tons of Wise County beehive foundry coke to a Wisconsin melter. Demand for New River foundry coke is light.

Foundry coke prices per net ton delivered Cincinnati: By-product coke, \$9.02; Wise County coke, \$7.09 to \$7.59; New River coke, \$9.09 to \$9.59. Freight rates, \$2.14 from Ashland, Ky.; \$2.59 from Wise County and New River ovens.

Old Material.—There have been few transactions in the past week, the market being exceptionally quiet. Steel plants in this district are accepting a fair amount of material on current contracts. Prices given below are largely nominal, because of the absence of buying.

Dealers' buying prices per gross ton f.o.b. cars, Cincinnati:

Heavy melting steel	.....	\$10.75 to \$11.25
Scrap rails for melting	.....	11.25 to 11.75
Loose sheet clippings	.....	8.25 to 8.75
Bundled sheets	.....	9.25 to 9.75
Cast iron borings	.....	7.75 to 8.25
Machine shop turnings	.....	7.25 to 7.75
No. 1 busheling	.....	10.00 to 10.50
No. 2 busheling	.....	6.00 to 6.50
Rails for rolling	.....	12.50 to 13.00
No. 1 locomotive tires	.....	12.75 to 13.25
No. 1 railroad wrought	.....	10.00 to 10.50
Short rails	.....	15.75 to 16.25
Cast iron carwheels	.....	12.25 to 12.75
No. 1 machinery cast	.....	15.25 to 15.75
No. 1 railroad cast	.....	12.75 to 13.25
Burnt cast	.....	7.50 to 8.00
Stove plate	.....	8.25 to 8.75
Brake shoes	.....	9.50 to 10.25
Railroad malleable	.....	11.50 to 12.00
Agricultural malleable	.....	11.00 to 11.50

PERSONAL

Franklin E. Bragg of N. H. Bragg & Sons, Bangor, Me., was elected president of the New England Iron and Hardware Association at the annual meeting held on June 19 in Boston. He has been vice-president of the organization and succeeds William A. Hopkins, Decatur & Hopkins Co., Boston, who has served two terms. William H. Bowe, Herrick Co., Boston, was elected vice-president to succeed Mr. Bragg. In addition to Messrs. Hopkins, Bragg and Bowe, the following directors were elected for the ensuing year: Charles A. Adams, John B. Varick Co., Manchester, N. H.; Charles W. Henderson, Jr., and R. H. Sanderson, E. P. Sanderson Co., Cambridge, Mass.; R. M. Boutwell, Standard Horse Shoe Co., Boston; Frank F. Chase, Chase, Parker & Co., Boston; F. Marsena Butts, Butts & Ordway Co., Boston; M. B. Damon, Fitchburg Hardware Co., Fitchburg, Mass.; C. C. Dodge, George F. Blake, Jr., & Co., Worcester, Mass.; George M. Gray, Peter Gray & Sons, Cambridge; G. M. Congdon, Congdon & Carpenter Co., Providence, R. I.; Quincy W. Wales, Brown-Wales Co., Boston, and C. D. Alexander, Emery, Waterhouse Co., Portland, Me. George J. Mulhall was reelected treasurer and clerk of the association.

S. Wells Utley, president Detroit Steel Castings Co., Detroit, was elected president of the Detroit Board of Commerce at a meeting of the board of directors held on June 19. Mr. Utley has been president of the American Foundrymen's Association for the last two years.

Herman Diederichs, director of Sibley School of Mechanical Engineering, Cornell University, has been made the first incumbent of a new professorship endowed by alumni of the University in memory of John E. Sweet, a member of the first faculty of Sibley College, one of the founders of the American Society of Mechanical Engineers and the inventor of the straight-line steam engine. Professor Diederichs is a graduate of Cornell, having received the degree of mechanical engineer in 1897.

John A. Coleman, 1006 Washington Avenue, Houston, Tex., has been appointed Texas representative for the Roller-Smith Co., 233 Broadway, New York, maker of electrical instruments and circuit breakers. He has had wide experience in the electrical business and in his territory.

Charles A. Terry, vice-president Westinghouse Electric & Mfg. Co., has been elected a director, taking the place left vacant by the death of Gen. Guy E. Tripp.

B. J. Matteson, industrial relations chief and industrial representative of the president of the Colorado Fuel & Iron Co., Denver, is retiring from that office. His assistant, William I. Reilly, has resigned, also, according to a report from Denver.

H. T. Weeks has been appointed representative in Colorado, Utah, Wyoming and northern New Mexico for the Roller-Smith Co., 233 Broadway, New York, maker of electrical instruments and circuit breakers. His headquarters are in the United States National Bank Building, Denver. He will handle the entire line of products put out by the company. He has had wide experience both in the electrical business and in the territory he will cover.

George Smith has been appointed vice-president of the Hanson-Van Winkle-Munning Co. (electro-plating equipment), Matawan, N. J. He will be in charge of the activities of the company in the Central and Western States. A native of New England, Mr. Smith entered business with the General Electric Co., Lynn, Mass. On Sept. 1, 1922, he joined A. P. Munning & Co., in charge of automatic electro-plating installations, directing the design of machinery. A year later he went to Roth Brothers & Co., Chicago, as vice-president and general manager, coming back now to the other organization under its present name.

Richard F. Grant has resigned as vice-president of the M. A. Hanna Co., Cleveland, and as president of the Susquehanna Collieries Co., anthracite division of the Hanna company, to become head of the newly formed sales corporation of the Lehigh Valley Coal Co. He has been succeeded as president of the Susquehanna company by James Prendergast, who has had charge of anthracite sales of the Hanna company.

J. M. Fuller, president Harrington & King Perforating Co., Chicago, is abroad on a vacation until September.

Robert A. Gillies, assistant superintendent of blast furnaces at the South works, Illinois Steel Co., Chicago, has been made superintendent of the Steel Company of Canada, Ltd., Hamilton, Ont. Mr. Gillies was first employed in the chemical laboratories of the South works. He was made assistant superintendent in 1925.

Robert L. Browne, 1425 Statler Office Building, Boston, has been appointed district sales representative of the Swift Electric Welder Co., Detroit, for the Eastern territory, comprising the State of New York and the New England States.

Hyman Botwinik, treasurer Botwinik Brothers, Inc., machinery merchant, New Haven, Conn., is leaving for a three or four months' pleasure and business trip to Europe, where he will visit England, France, Germany, Russia, Italy and other countries.

Raymond O. Abbott, who for three years has been secretary and treasurer of the National Pipe Bending Co., New Haven, Conn., has now been elected president and treasurer, succeeding H. S. Brown, who recently passed away. Wade G. Marks, sales promotion manager, was elected secretary. It is the aim and plans of the present officers to continue the company along the same general policy as under Mr. Brown's régime.

O. H. Davidson, president O. H. Davidson Equipment Co., 130 West Fourteenth Avenue, Denver, has been appointed district manager in the Rocky Mountain territory by the Oliver Iron & Steel Corporation, Pittsburgh. Mr. Davidson will represent the bolt, nut, rivet and pole line material departments of the Oliver company.

L. F. Dolan, 27 Hancock Street, Dorchester, Mass., will handle sales in Massachusetts for the Hill Clutch Machine & Foundry Co., Cleveland.

A. E. Woolam, Box 1089, Kalamazoo, Mich., is to handle Southern Michigan sales for the Hill Clutch Machine & Foundry Co., Cleveland.

George D. Buckwell, for the past eight years Pittsburgh district manager for the M. A. Hanna Co., Cleveland, has resigned, effective July 1, to become associated with the Sharpsville Furnace Co., with blast furnaces at Sharpsville, Pa., and Neville Island, Pittsburgh. He will serve as manager of sales of pig iron, coke and by-products.

George J. Lynch, who has been assistant district manager in the New York office of the Chicago Pneumatic Tool Co., has been appointed the company's district sales manager at St. Louis, with headquarters at 1931 Washington Avenue.

H. G. Graham has been named head of the metallurgical and inspection department of the Jones & Laughlin Steel Corporation, Pittsburgh. He succeeds F. S. Slocum, who retires July 1.

R. H. Clarke, vice-president and general manager of the Otis Steel Co., Cleveland, sailed a few days ago for an extended trip through Europe.

Thomas J. O'Brien, secretary and director of purchases for the Fort Pitt Malleable Iron Co., Pittsburgh, has severed that connection, after an association of more than 25 years with that company.

OBITUARY

FRED H. MCISAAC, secretary and treasurer of the Lamson & Sessions Co., Cleveland, died suddenly June 20, aged 43 years. He had



F. H. MC ISAAC

long been identified with the bolt and nut industry in the Central West and was an active participant in convention work of the American Hardware Manufacturers' Association and various other organizations. Mr. McIsaac was born in Detroit and began his business career with the Kirk-Latty Mfg. Co., Cleveland, in 1901. He was advanced through various positions, finally becoming president of that company in 1926. When the company was consolidated with the Lamson & Sessions Co. he was made secretary and treasurer of the consolidated company.

SAMUEL RALPH JONES, a director and officer of the E. D. Jones & Sons Co., Pittsfield, Mass., paper mill machinery manufacturer, died June 21 at his home in that city, aged 50 years. He was well known in the New England pig iron and machine tool trade.

WILLIAM H. PETERS, vice-president and director of purchases, Jaeger Machine Co., Columbus, Ohio, maker of gas engines, died on June 20.

COL. CHARLES CLIFTON, chairman of the board, Pierce-Arrow Motor Car Co., Buffalo, died at his home in that city, June 21, after an illness of a week. He was in his seventy-fifth year. Mr. Clifton was born in Buffalo Sept. 20, 1853, and started his business career in 1871 as a clerk in the hardware store of Sidney Shepard & Co., Buffalo. His experience included work in the passenger department of the Erie Railroad and with other organizations, until, in 1897, he became secretary and treasurer of the George N. Pierce Co., Buffalo. When this company was reorganized in 1909 as the Pierce-Arrow Motor Car Co., he remained its treasurer until he was elected president in 1916. He had been chairman of the board since 1919. When the Automobile Manufacturers' Association was dissolved in 1904, giving place to the National Automobile Chamber of Commerce, Mr. Clifton became the first president and held that office for 23 years, resigning in March, 1927. Since that time he had been honorary president and director of the chamber. He was an officer of the National Guard from 1881 to 1893.



COL. C. CLIFTON

GUSTAV H. KOVEN, president L. O. Koven & Brother, range boiler manufacturer, Jersey City, died on June 11.

R. E. MOORE, sales manager for Gar Wood, Inc., motor boat manufacturer, died at the wheel of a speed boat which he was guiding on the Detroit River on June 17. In the boat with him at the time he collapsed were his wife and a party of friends; the boat ran wild

for several minutes. Investigation showed that Mr. Moore, who was 37 years old, had suffered a heart attack.

J. JACOB PIPPART, founder, president and general manager of the Genesee Tack Co., Mount Hope Avenue, Rochester, N. Y., died at his home in that city on June 20 after a long illness.

WINFIELD S. BARNES, president Barnes Construction Co., Philadelphia, died on June 19 at the Frankford Hospital in that city, aged 48 years. He had been engaged in structural iron and steel fabricating for many years, and during the World War was head of the Winfield S. Barnes Engineering Corporation, which was active in the production of marine mines and depth bombs.

JOHN S. ROBERTS, formerly connected with the United States Cast Iron Pipe & Foundry Co., died at his home in Cleveland on June 18. He was born Aug. 31, 1863, and had been connected with the pipe industry for 34 years. For the last 14 years he has served as resident manager of the Cleveland shop of the United States company. Mr. Roberts was identified with all civic projects in Cleveland and was well known in the waterworks industry.

May Canadian Output of Pig Iron and Steel

TORONTO, June 25.—The production of pig iron in Canada in May amounted to 87,811 gross tons, which was 18 per cent over the 74,736 tons produced in the preceding month and compares with 78,987 tons reported for May, 1927. While the production of foundry iron fell off sharply, it was more than offset by increased output of basic iron and malleable. Foundry iron dropped from 21,539 tons in April to 7667 tons in May; basic iron rose from 52,346 tons in April to 68,945 tons in May, and while only 851 tons of malleable iron was produced in April, 11,199 tons were made in May.

For the five months ended with May the cumulative production of pig iron was 370,634 gross tons, an increase of 11 per cent over the 334,276 tons produced during the corresponding period of 1927. This year's output included 286,762 tons of basic iron; 62,108 tons of foundry iron and 21,762 tons of malleable iron. The bulk of the basic iron was made for the further use of producers, while most of the foundry and all of the malleable iron was for direct sale.

The producing furnaces during the month had a daily capacity of 3150 tons per day.

The production of ferroalloys in Canada during May at 4049 tons was 10 per cent under the 4505 tons produced in April.

The production of steel ingots and castings in Canada in May amounted to 117,655 tons, an increase of 4 per cent over the 112,780 tons of the previous month, and 22 per cent greater than the 96,711 tons produced in May last year. The gain for the month was wholly accounted for by the increased output of basic open-hearth steel ingots, which advanced to 112,488 tons from 106,868 tons in April.

For the five months ended with May the cumulative production of steel ingots and direct steel castings totalled 531,808 tons, an increase of 24 per cent over the 427,370 tons produced during the corresponding five months of 1927. This year's output to date included 512,533 tons of steel ingots and 19,275 tons of direct steel castings.

The Dominion Bureau of Statistics' index for prices (1913 = 100) was practically unchanged, being 141.7 for May as compared with 141.5 in April.

The Phoenix Steel Products Co., Phoenix, Ariz., has been appointed exclusive agent in Arizona for the products of the Truscon Steel Co., Youngstown, Ohio. The Phoenix company will have access to the complete stock of building products carried in the Los Angeles warehouse of the Truscon organization.

BETTER EXPORTS IN PROSPECT

American Mills Compete for Barbed Wire— China More Active—Importers Here Plan Tariff Protest

NEW YORK, June 26.—Export business with Far Eastern markets continues rather small, but many exporters see evidences of improvement in the outlook for foreign trade in iron and steel products. Although the Japanese market is quiet, there has recently been a slight increase in the volume of inquiry from Chinese merchants, particularly those in South China, and trade in certain products has been increasing in South American markets. Chinese buyers are actively seeking large and small tonnages of tin plate waste and tin plate waste waste, and some sizable shipments are reported being made both to Hong Kong and Shanghai. Recent sales of wire shorts have been at \$40 per ton, c.i.f. Hong Kong, and \$41 per ton, Shanghai, and there are numerous offers to buy at \$39 per ton, c.i.f., which exporters here consider too low to permit a profit. China is also buying bar crop ends and plate ends and cuttings, some recent sales of which have been at \$19 per ton, f.o.b. Sparrows Point, Md., and other Atlantic ports. This material is classified as scrap, and it is noteworthy that the May exports of scrap were unusually large, at about 59,000 tons.

Business with South American buyers has increased recently, as a result of larger buying of barbed wire, on which mills in the United States are evidently selling at \$1 to \$2 per ton lower than the present Continental quotations. On a recent inquiry for 500 tons of 50-lb. rails for Callao, Peru, Continental mills are understood to have been \$1 or more per ton higher in price than the leading export interest in the United States, despite the fact that the ocean freight rate from European ports was slightly less than the rate from this country.

Japanese Exporters May Combine

Exporters to Japan have recently been quoting on desirable tonnages of wire rods, some of which are understood to have gone to the Canadian maker, which is again in the market for wire rod business, following a brief period in which the mill was fully booked with Canadian rail orders. The recently reported combination of the United States Steel Products Co. and the Bethlehem Steel Corporation in a common export organization may result in a slight change in the present methods of trading with Japan. The two leading Japanese export houses are understood to have cooperated recently in certain instances, when a large order was under consideration, and it is believed that, with the two leading export interests combined, the two leading Japanese exporters in this country may find it profitable to work more closely than formerly, as they will have less competitive prices to submit to Japanese buyers.

Foreign Steel Prices Decline

Quotations of Continental steel mills to importers in the United States have declined slightly in the past week, but in most cases not to exceed 2c. to 3c. per 100 lb. Plain steel bars, which were quoted at the peak at about 1.90c. per lb., base, c.i.f. New York, have dropped to about 1.88c. per lb., and structural shapes range from as low as 1.58c. per lb. to 1.68c. per lb., c.i.f. New York, the price depending upon the tonnage involved, sizes specified and the country of origin. European mills are apparently beginning to seek tonnage again, following several weeks in which most of them evinced no special interest in selling except at premium prices.

Importers to Protest Tariff Decision

The decision of the United States Treasury Department that bar-size channels, angles and tees should be classified under paragraph 304, covering bars, instead of under paragraph 312, covering structural material and building forms, will evidently be protested by the importers affected by the ruling. The decision of the Treasury Department, reported in THE IRON AGE, June 21, page 1762, was that bar-size channels, angles and tees, when in sizes less than 3 in., are not known as structural shapes as that term is used commercially.

The report further pointed out that these sizes are bought and sold on a bar basis and not on the basis of structural shapes.

The importers of steel who are affected by this ruling, however, point to the specific and inclusive wording of paragraph 312, which covers structural shapes, as follows:

Paragraph 312. Beams, girders, joists, angles, channels, car-truck channels, tees, columns and posts, or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, not assembled, manufactured or advanced beyond hammering, rolling or casting, one-fifth of 1c. per lb.; any of the foregoing machined, drilled, punched, assembled, fitted, fabricated for use, or otherwise advanced beyond hammering, rolling, or casting, 20 per cent ad valorem; sashes, frames and building forms, of iron or steel, 25 per cent ad valorem.

The importers claim that in this paragraph, the statement "building forms, together with all other structural shapes of iron or steel" covers the small, bar-size shapes in question.

What to Require in Foundry Coke

(Concluded from page 1814)

all times. This affects the slag, as ash with high alumina makes a very viscous slag.

Chemical analysis has little to do with the characteristics of coke, in the opinion of E. J. Lowry. This is particularly true of beehive coke. He cited a case in which 100 per cent Pocahontas coal, coked for 96 hr., made a poor product, as it was impossible to get the slag or the iron to run well with it. With by-product coke, he believes that best results are obtained when the cellular space is about 48 per cent of the volume.

That physical characteristics of coke are more important than the chemical analysis, however good an indication that may be, was the contention of another speaker. He called particular attention to the structure of the coke and to the shatter test. He expressed the opinion that fine material in a carload makes a lot of difference with the performance of the coke. Similar opinions were voiced by other speakers. Walter M. Saunders, Saunders & Franklin, Providence, R. I., believes the physical condition of coke is its most important characteristic, aside from the question of ash and sulphur. The piece should be large and strong and should burn readily.

Some Coke Breaks Up Readily

By-product coke appears to be especially sensitive to breaking up in handling, according to Mr. MacKenzie. He mentioned cases in which 2-in. coke generally gave better results than that graded as 3-in. coke; the larger piece broke up in going down to the melting zone and resulted in placing a greater quantity of small stuff down there.

Sulphur is present in coal in three forms—pyrites, sulphate and organic combinations—according to A. C. Porter, Lincoln Foundry Co., Lincoln, Neb. Whether this is true also of coke we do not know. There is room for investigation to learn about these forms of sulphur as regards coke. There is a great deal to be learned also about the connection between the chemical composition of the coke and its physical qualities. The amount and character of ash may affect the surface of the cellular openings and thus produce an effect upon the combustibility of the coke.

A plea for guidance was made by M. H. Moore, of the Piston Ring Co., Muskegon, Mich. He stated that his company turns out as much as 310,000 castings in a day and that 5 min. of poor operation of the cupola may result in 10,000 spoiled castings. For this reason, close control is essential.

In closing the discussion, Mr. Selvig spoke of means of obtaining correlation between laboratory tests and the practical results in the cupola. Among other things he mentioned a case in which by-product coke and beehive coke made from the same coal gave markedly different operating results. By-product coke produced a larger amount of clinker in the ash. The problem is squarely up to the foundrymen to tell the coke maker what properties in the coke they find most desirable.

Machinery Markets and News of the Works

SALES STILL AT GOOD RATE

Orders from Implement Makers Increase Bookings in Chicago District

More Equipment Required for Boston Schools—A Third List to Be Issued Later

MACHINE tool sales continue at the average rate of May, and in some centers, notably Chicago, there has been an increase in the volume of business. Orders placed by agricultural implement manufacturers have contributed to what appears will be one of the largest month's business in many years in the Chicago district.

The flow of new inquiry is fairly steady. A feature of the present activity is the widespread demand, both inquiries and orders coming from many different industries. This class of business is reported to have been the best in several years.

New York

NEW YORK, June 26.

MACHINE TOOL business is expected by most sellers in this district to reach as large a total for June as in any previous month this year. There is also a fairly steady flow of new inquiries, promising continued activity. The Wright Aeronautical Corporation, Paterson, N. J., is still one of the outstanding buyers of tools in this territory. In addition to the substantial list of tools under inquiry for the extension to its plant on adjoining property, the company closed last week on a number of tools, including several engine lathes, a turret lathe and a tool grinder. The General Electric Co., Schenectady, is inquiring for a list of tools, including five turret lathes, and closed the past week on several lathes, boring mills and milling machines for its refrigerating machinery plant. Dwight P. Robinson & Co., New York, are in the market for a 10-in. and 16-in. engine lathes.

Recent machine-tool sales of Pratt & Whitney Co., have included 27 lathes, of which 18 13-in. engine lathes were in one order, five 16-in. lathes in another, and four 7-in. x 32-in. bench lathes in a third. Other recent sales by this company have included a No. 4 die sinker, two No. 1A and three No. 2 jig borers, 6-in. vertical shaper, 14-in. vertical surface grinder, 8-in. rotary surface grinder, two No. 3 bench universal milling machines and one 6-in. x 20-in. thread milling machine.

Niles-Bement-Pond Co., recently closed a No. 5 Newark gear cutting machine, 4-spindle Acme nut tapping machine, Ohio No. 2 universal milling machine, 32-in. shaper, No. 2 surface grinder, universal cutter grinder and three 3-ft. Morris radial drills.

Recent sales of squaring and gap shears by Kutscheid Mfg. Co., Chicago, totaled 16; buyers included Thompson-Starrett Co., New York; Fairchild Airplane Mfg. Co., Farmingdale, N. Y.; Sexauer & Lemke Co., Long Island City; Birmingham Fabricating Co., Birmingham; James Hunter Machine Co., North Adams, Mass.; Shull Co., Washington and Wadsworth-Core Machine & Equipment Co., Akron, Ohio.

General Cable Co., 114 Liberty Street, New York, manufacturer of electrical wires and cables, has acquired property at Mobile, Ala., and plans new works to cost more than \$200,000 with equipment.

Nathan Langer, 81 East 125th Street, New York, archi-

Stock taken of the volume of business placed during the first six months of 1928 indicates an increase of 15 to 20 per cent over the same period last year. The outlook for the last half of the year is regarded by some machine tool builders as fair, with possibly a slight let-down in July and August, due to the usual seasonal lull.

A second list of tools for the Hyde Park district school has been issued by the city of Boston. It comprises 25 items, including lathes, grinders and drilling machines. Another list, calling for milling machines and other comparatively large tools, is expected within a week.

Other inquiries include one from the General Electric Co., five turret lathes being among the machines required.

Sizable purchases have been made by the Caterpillar Tractor Co., Peoria, Ill., and the Case Threshing Machine Co., Racine, Wis. Deere & Co., Waterloo, Iowa, have practically closed their list.

tect, has plans for a two-story automobile service, repair and garage building, to cost about \$110,000 with equipment.

F. R. Smith, 9219 New York Avenue, Jamaica, L. I., has plans for a storage and distributing plant at Creedmore, L. I., to include one-story machine shop, 65 x 80 ft. Morrell Smith, 161-10 Jamaica Avenue, Jamaica, is architect.

Decorated Metal Mfg. Co., 199 Sackett Street, Brooklyn, has awarded general contract without competition to Barney-Ahlers Construction Corporation, 110 West Fortieth Street, New York, for a six-story addition, to cost approximately \$115,000 with equipment.

Cohen & Siegel, 45 West Fifty-seventh Street, New York, architects, have taken out permit for two-story automobile service, repair and garage building, to cost in excess of \$300,000 with equipment.

Allen Air Appliance Co., Inc., Glens Falls, N. Y., recently formed by Edward J. McEwen, 262 Broadway, Fort Edward, N. Y., and associates, with capital of \$200,000, is said to be planning early operation of plant for manufacture of compressed air equipment and other machinery. George S. Witham, 106 Main Street, Hudson Falls, N. Y., is interested in organization.

Louis J. and Fred Ziehm, 34 Clinton Avenue, Albany, N. Y., have awarded general contract to Jasper Myers, 90 State Street, for a three-story addition to their automobile service, repair and garage building, including improvements in present structure, to cost about \$120,000 with equipment.

American Radiator Co., 40 West Fortieth Street, New York, has acquired about 3 acres at New Rochelle, N. Y., fronting on New York Central Railroad, improved with building of 80,000 sq. ft. floor space, and will establish a new factory branch and distributing plant.

Fairchild Airplane Mfg. Co., 270 West Thirty-eighth Street, New York, is reported planning a new aircraft factory and assembling plant at Farmingdale, L. I., to cost in excess of \$75,000. A housing development for employees also is projected.

Farber & Kalkin, 1746 Pitkin Avenue, Brooklyn, architects, have plans for a two-story automobile service, repair and garage building, 120 x 175 ft., to cost close to \$130,000 with equipment.

George B. Cortelyou, president Consolidated Gas Co., 130 East Fifteenth Street, Oscar H. Fogg, vice-president of same company and president American Gas Association, 420 Lexington Avenue, New York, and associates have organized Ensign-Reynolds, Inc., with capital of \$250,000, to operate plant in New York district for manufacture of gas-fired appliances, primarily industrial heating apparatus. Operations will begin soon.

Board of Education, Union Free School District No. 5, Ticonderoga, N. Y., plans installation of manual training equipment in new two-story high school, to cost \$275,000, for which bids will be asked on general contract early in July. Tooker & Marsh, 101 Park Avenue, New York, are architects.

Leon Dynkin and Harry Shapiro, Jersey City, N. J., have leased former local plant of American Wire Form Co., at 265-73 Grant Avenue, one-story, 100 x 100 ft., and will remodel for manufacture of metal novelties.

Columbia Store Fixture Co., Newark, has purchased former factory of Roseville Novelty Works, 367-71 North Fifth Street, comprising one and two-story building, on site, 75 x 125 ft., and will occupy for new plant.

D. W. May, Inc., 380 Central Avenue, Newark, manufacturer of electrical equipment and supplies, has awarded general contract to Becker Construction Co., 361 Grove Street, for two one-story factory units, to cost close to \$50,000. Marshall N. Shoemaker, 15 Central Avenue, is architect.

Turner Machine Co., 28 Eagle Street, Newark, manufacturer of tanning machinery, etc., will begin work early in July on one-story machine shop, 60 x 92 ft., for which general contract recently was let to Enstice Brothers, Inc., 111 Academy Street, to cost about \$25,000 with equipment.

Joseph Weber, 132 Twenty-sixth Street, Guttenberg, N. J., architect, is drawing plans for two-story and basement automobile service, repair and garage building, 100 x 105 ft., at West New York, to cost about \$130,000 with equipment.

James T. Gordon Co., 11 Park Place, New York, has been appointed sales representative for Hill Clutch Machine & Foundry Co., Cleveland, in metropolitan New York territory.

Royal Plating & Polishing Co., formerly at 144 Bleecker Street, Newark, N. J., has moved to its new two-story plant at 152 Bleecker Street. Frank P. Barile is president. New chromium plating equipment is being installed.

New England

BOSTON, June 25.

MACHINE-TOOL business is better than it appears on the surface. Two of the largest local houses so far this month have done a very good business in high priced equipment, at least 15 machines having been sold. Two other firms also report good business and a fifth company states that it has booked larger sales this month than in May. Lathes, radial drills, milling machines, grinding machines and miscellaneous equipment are involved in current business. Used tools sold the past week include a heavy-duty Cincinnati miller, a gear cutter, several 14-in. and 16-in. lathes and a few small milling machines, most of them to shops near Boston.

The city of Boston has issued its second list of tools for the Hyde Park district school. It includes approximately 25 items, including lathes, grinding machines, upright and sensitive drills and hack saws. Another list calling for milling machines and large tools is expected within a week. Bids for the first lot of lathes are in. This business, together with buying by the Boston & Albany against its list of tools, and by other New England railroads, is expected to liven up the market. New inquiries from industrial plants are few. Demand for small tools has dropped off.

Business with New England machine-tool builders is spotty, yet collectively they are moderately busy. A Hartford plant is exceptionally busy and is operating night shifts in certain departments. One Worcester grinding machine maker is very busy, and another quite active, while a maker of miscellaneous tools in that city is more busy than it has been in some time. At least one Bridgeport shop is well engaged, and a Vermont plant is reported busier than it has been in months.

Edlund Co., Burlington, Vt., maker of can openers, has moved into larger quarters and is gradually taking on equipment.

Bryant Electric Co., Bridgeport, Conn., which recently acquired the Hemco Electric Mfg. Co., has tentative plans for new equipment.

Kesterman Brothers, Cranston, R. I., jewelry manufacturers, will build a new plant to cost \$30,000 without equipment. Bench tools will be required later.

L. G. Balfour Co., Attleboro, Mass., jewelry manufacturer, has started on a construction program to enlarge its output. It also has under consideration new metal-working equipment.

Kidder Press Co., National Woodworking Machinery Co., Dover, N. H., and the United Printing Machinery Co.,

Boston, have consolidated as the U. P. M. Kidder Press Co., Inc. At a future date it is planned to consolidate plants and possibly to purchase new equipment.

Work is about to start on a one-story, 75 x 135 ft. plant for Froiland Chain & Mfg. Co., 2543 Main Street, Springfield, Mass. Paul Froiland is president. Plans are private.

Farrel Foundry Co., Waterbury, Conn., has plans for a three-story, 35 x 200 ft. addition.

An expansion program is being arranged by Holyoke Co., Holyoke, Mass., manufacturer of covered wire and cables, etc., at its Springdale plant, consisting largely of installation of additional machinery.

A. L. Adams Paper Co., Baldwinsville, Mass., has asked bids on general contract for two-story addition to mill, 82 x 100 ft., to cost close to \$50,000 with equipment. Leo Shlick, 314 Beacon Street, Boston, is engineer.

Royal Typewriter Co., Hartford, Conn., has awarded general contract to Denis O'Brien & Sons, 118 Asylum Street, for two five-story additions, 68 x 190 ft., and 68 x 70 ft., respectively, to cost about \$250,000 with equipment. Greenwood & Noerr, 847 Main Street, are architects and engineers. Headquarters are at 316 Broadway, New York.

Meisel Press Mfg. Co., 944 Dorchester Avenue, Dorchester, Boston, manufacturer of printing presses, parts, etc., has asked bids on general contract for one and two-story addition, 100 x 220 ft., to cost in excess of \$150,000 with equipment. H. S. Cleverdon, 46 Cornhill Street, is architect.

Automatic Equipment Co., Attleboro, Mass., has leased space in a local factory and plans early establishment of plant for manufacture of an automatic fire extinguisher and patented oil burner.

Connecticut Light & Power Co., 36 Pearl Street, New Britain, Conn., has filed plans for two-story equipment storage and distributing plant, with mechanical repair shop, to cost close to \$150,000 with equipment.

Chicago

CHICAGO, June 25.

MACHINE-TOOL orders in June from agricultural implement manufacturers will make the total volume for this month one of the largest in many years. Deere & Co. have practically closed their list for the Waterloo plant and the Caterpillar Tractor Co., Peoria, Ill., and Case Threshing Machine Co., Racine, Wis., are closing large purchases. The Santa Fe is reported also to have bought all but one item remaining on its list issued early in the spring.

Fresh inquiry for individual machines is more promising and there is a substantial volume of business coming from miscellaneous sources. Quotations on the large machines needed by the General Electric Co. at Chicago have been forwarded to Schenectady for final action. A Chicago forging plant has purchased a turret lathe.

Contract has been let by Aurora Foundry Co., 385 Spruce Street, Aurora, Ill., to Lylle & Frenier, 421 Fulton Street, for one-story addition, 45 x 140 ft., to cost close to \$25,000 with equipment.

Master Planter Co., 800 North Clark Street, Chicago, manufacturer of tractors, agricultural equipment, etc., has filed plans for one and two-story plant, 75 x 126 ft., to cost about \$60,000 with equipment.

Village Council, Truman, Minn., is asking bids until July 10 for a 75,000-gal. steel water tank on 100-ft. tower, including all incidental equipment, for municipal waterworks. Toltz, King & Day, Inc., St. Paul, Minn., is engineer.

Chicago, Burlington & Quincy Railroad Co., 547 West Jackson Boulevard, Chicago, has awarded general contract to Burrell Engineering & Construction Co., 513 West Jackson Boulevard, for a new grain elevator at Council Bluffs, Iowa, to cost about \$85,000 with conveying, loading and other equipment.

Barnes Drill Co., Chestnut Street, Rockford, Ill., manufacturer of honing machines and other machine tools, has awarded general contract to Security Building Co., 1016 Charles Street, for a one-story addition, 80 x 145 ft., to cost more than \$50,000 with equipment. A. G. Eliel, Stewart Building, is architect.

Board of Education, Minneapolis, Minn., is considering installation of manual training equipment in extensions to Nokomis junior high school, to cost about \$275,000. Schuett & Meier Co., Thorpe Building, are engineers.

George Brumlik, Chicago, operating an automobile service, repair and garage in local Engineers' Building, has awarded general contract to B-W Construction Co., 720 Cass Street, for a new ten-story service, repair and garage unit 80 x 150 ft., to cost in excess of \$350,000 with equipment.

Phillip Gollner Plumbing Supply Co., Thirty-third Street and Archer Avenue, Chicago, is said to be planning early rebuilding of portion of plumbing and heating equipment plant destroyed by fire June 15, with loss close to \$200,000 with equipment.

Metz Mfg. Co., Seventeenth and Elm Streets, Dubuque, Iowa, manufacturer of sash, doors and other millwork products, will soon take bids for a three-story addition to cost close to \$65,000. C. I. Krajewski, 730 Main Street, is architect.

Board of Education, Dixon, Ill., plans installation of manual training equipment in new three-story high school to cost \$375,000, for which bids have been asked on general contract. Royer, Danely & Smith, Urbana, Ill., are architects.

Hostler Coal & Coke Co., 417 South Dearborn Street, Chicago, recently appointed sales agent for Chattanooga Solvay by-product coke, manufactured by Tennessee Products Corporation, will distribute egg and nut size coke north of Ohio River.

Chicago Hardware Foundry Co., North Chicago, Ill., will spend \$50,000 for improvements at its various properties. A new core room and a pattern room is to be erected at Elkhart plant.

Newton Mfg. Co., Newton, Iowa, manufacturer of novelties, is spending \$40,000 for plant improvements.

Kutscheid Mfg. Co., Chicago, reports sales of squaring and gap shears to Zouri Drawn Metal Co., Chicago Steel Service Co., Belmont Sheet Metal Works, Caine Steel Co., Hanley & Co., and Triner Scale & Mfg. Co., all in Chicago; Durand Steel Locker Co., Chicago Heights, Cutler-Hammer Co., Milwaukee, Hastings Equity Grain Bin Mfg. Co., Hastings, Neb.

Philadelphia

PHILADELPHIA, June 25.

BIDS will soon be asked by M. Harrison Bonner, 1032 North Sixty-seventh Street, Philadelphia, architect, for a four-story automobile service, repair and garage building to cost in excess of \$200,000 with equipment.

Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia, is arranging for increase in preferred stock from \$30,000,000 to \$35,000,000, proceeds to be used for construction and improvements, including multi-story automobile service, repair and garage in connection with bus terminal; site has been purchased near Broad Street and Olney Avenue.

Board of Trustees, Drexel Institute of Arts, Science and Industry, Chestnut and Thirty-second Streets, has completed plans for new three-story engineering building, to cost more than \$200,000 with equipment. Day & Zimmermann, Inc., 1600 Walnut Street, is construction engineer.

Robert N. Dippy, Medical Arts Building, Philadelphia, architect, has plans for a new cold storage and refrigerating plant, 50 x 168 ft., to cost in excess of \$100,000 with equipment.

Philadelphia & Reading Railway, Reading Terminal, Philadelphia, has had plans approved by city for terminal yard at Logan, with car repair and reconditioning facilities, in connection with electrification of lines to Germantown and Chestnut Hill.

Barbour Iron Works, Marion Street and Pennsylvania Railroad, Trenton, N. J., will soon begin superstructure for one-story addition, 76 x 150 ft., to cost more than \$50,000 with equipment. Walter Hankin, 224 East Hanover Street, is architect.

South Williamsport School District, South Williamsport, Pa., is considering installation of manual training equipment in two-story high school to cost in excess of \$225,000. Lawrie, Green & Co., Third and Forster Streets, Harrisburg, Pa., are architects.

Parless Coal Co., Deiblers, Pa., has leased local coal washery and property of Mid-Anthracyte Co., and will establish plant for production of coal briquettes. Additional equipment will be installed.

Department of Property and Supplies, State Capitol, Harrisburg, Pa., B. E. Taylor, secretary, is asking bids until July 9 for 129 cast iron lamp standards for installation in Capitol Park.

Susquehanna Collieries Co., Mount Carmel, Pa., has authorized electrification of its local Cameron colliery, to cost more than \$65,000 with equipment. Headquarters are in Commercial Trust Building, Philadelphia.

Joint School Boards of Westgrove, Avondale and London Grove Townships, Westgrove, Pa., plan installation of manual training equipment in two-story junior and senior high school to be erected about midway between first two noted townships, to cost \$250,000, for which general contract has been let to W. M. Francis, duPont Building, Wilmington, Del. E. W. Martin, duPont Building, is architect; Calvert & Barnes, 2114 Sansom Street, Philadelphia, are mechanical engineers.

South Atlantic States

BALTIMORE, June 25.

PLANs are being considered by Eastern Shore Public Service Co., Salisbury, Md., for extensions in steam-operated electric power plant at Vienna, Md., to double present capacity, to cost close to \$500,000. Extensions are also planned in transmission lines.

Piedmont Corporation, Bona Allen Building, Atlanta, Ga., is completing plans for installation of rock-crushing plant in connection with quarry at Lithonia, Ga., to cost more than \$250,000 with machinery. Standard gage railroad line will be built between quarry and plant.

Charlotte Paper Co., 214 South College Street, Charlotte, N. C., is reported planning new factory for manufacture of folding paper boxes, cartons, etc., to cost more than \$85,000 with machinery.

Union Brothers, 37 West Cross Street, Baltimore, manufacturers of furniture, will soon take bids on general contract for first unit of new factory to cost upward of \$75,000 with equipment. Benjamin Frank, 517 North Charles Street, is architect.

Nitrate Agencies Co., Wilmington, N. C., manufacturer of fertilizer products, has closed arrangements with Atlantic Coast Line Railroad Co., Wilmington, for rebuilding local plant recently destroyed by fire, to be occupied under lease. New unit will provide for about twice capacity of former plant and is estimated to cost \$100,000 with machinery. It is scheduled for completion early in fall.

Georgia Power & Light Co., Atlanta, Ga., will issue bonds in amount of \$2,700,000, and preferred stock totaling 11,300 shares, no par value, portion of proceeds to be used for expansion and improvements, including transmission lines.

Southern Metal Novelties Co., Greenville, S. C., recently formed by W. W. McIver, 40 Tindal Avenue, and associates, is reported planning early operation of plant for manufacture of metal goods.

General purchasing officer, Panama Canal, Washington, is asking bids until July 13, for one power shovel, pipe threading and cutting machines, metal bending machines, pneumatic hoist, journal jacks, bolts, nuts, rivets, rack castings, pumping machinery, etc., Panama schedule 1885.

Standard Looms, Inc., Spartanburg, S. C., care of Isaac Andrews, 519 East Main Street, president, recently formed by Mr. Andrews and associates with capital of \$750,000, has purchased property in Fernwood Farms district, East Spartanburg, for a plant to manufacture textile looms and kindred equipment, for which plans are being drawn by Lockwood, Greene & Co., Charlotte, N. C., architects and engineers. Plant will consist of main machine shop, 70 x 500 ft.; foundry, 80 x 300 ft., and other units, to cost more than \$250,000 with equipment.

Standard Fertilizer Co., Inc., Williamston, N. C., has begun an expansion program to double approximately present capacity. New machinery will be installed, including bagging equipment, conveying, loading and other handling apparatus. Company is a subsidiary of Standard Wholesale Phosphate Co., Continental Building, Baltimore.

P. H. Hanes Knitting Co., Winston-Salem, N. C., plans construction of power plant in connection with six-story mill addition, entire project to cost in excess of \$175,000 with machinery. Mees & Mees, Kinney Building, Charlotte, N. C., are architects and engineers.

Buffalo

BUFFALO, June 25.

INSTALLATION of manual training equipment is planned by Board of Education, Potsdam, N. Y., in new high school, estimated to cost \$300,000, for which plans will be drawn by Lansing & Green, Sherman Trust Building, Watertown, N. Y., architects.

DuPont Cellophane Co., Inc., River Road, Buffalo, manufacturer of special glazed paperized products under special process, has awarded general contract to duPont Engineering Co., Wilmington, Del., an affiliated organization, for one-story and three-story additions, reported to cost in excess of \$200,000 with equipment.

Daniel C. Hungerford, 65 Ontario Street, Corning, N. Y., and associates have organized Standard Mfg. Co., with capital of \$50,000, to operate a local iron and steel fabricating plant. Operations will begin soon. Francis C. Williams, 169 Cedar Street, is also interested in new company.

Houde Engineering Corporation, 1392 West Avenue, Buffalo, manufacturer of automobile shock absorbers, will soon begin superstructure for a one-story addition to cost in excess of \$85,000 with equipment.

H. E. Holbrook Co., Caledonia, N. Y., manufacturer of builders' hardware, etc., is considering rebuilding of portion of plant destroyed by fire June 15, with loss reported at more than \$40,000 with equipment. Headquarters are at 89 Federal Street, Boston.

The Crane Market

OVERHEAD crane inquiry is still in fair volume, but users of locomotive cranes have been rather inactive recently. Most of the overhead inquiry is for single pieces of equipment with the exception of a sizable list for export to South Africa, specifications on which are available from the Department of Commerce, Washington, or Custom House, New York. Bids on this list are to be in by July 25. Sheffield Steel Corporation, Kansas City, Mo., will buy a 10-ton, 120-ft. overhead electric traveling crane. Few new inquiries have appeared for locomotive cranes, except for used equipment, business in which is slightly more active than in new cranes. About the largest outstanding list of cranes and steam shovels is the inquiry from Dwight P. Robinson & Co., New York, for export to Argentina. No action has been taken on this inquiry as yet.

Among recent purchases are:

Corson Construction Co., 1600 Bushwick Avenue, Brooklyn, 5-ton capacity truck crane from Browning Crane Co. Hobbs, Peabody Co., Charlotte, N. C., 5-ton capacity truck crane from Browning Crane Co.

Dixie Fuel & Supply Co., Detroit, 18-ton, 8-wheel steam locomotive crane from Orton Crane & Shovel Co.

American Steel Foundries, East St. Louis, Ill., two 20-ton,

108-ft. span electric cranes from Manning, Maxwell & Moore, Inc.

Marquette Cement Mfg. Co., La Salle, Ill., a 30-ton, power house crane from unnamed bidder.

Northland Coal Co., Ltd., Buchan, Can., $\frac{3}{4}$ yard drag line from Northwest Engineering Co.

Weyerhaeuser Timber Co., Klamath Falls, Ore., crawler gasoline shovel crane from Northwest Engineering Co.

Farris Engineering Co., Pittsburgh, 15-ton gasoline crawler crane from Northwest Engineering Co.

The Power Corporation, New York, 1-yard gasoline crawler shovel for development work at Watertown, N. Y.

Thunder Lake Lumber Co., Rhinelander, Wis., $\frac{3}{4}$ -yard gasoline crawler shovel from Northwest Engineering Co.

K. E. Treylor, Charleston, Miss., 1-yard drag line from Northwest Engineering Co.

W. S. Hardwick, Beardstown, Ill., $1\frac{1}{4}$ -yard drag line from Northwest Engineering Co.

J. N. Pitts, Sturgis, Sask., $1\frac{1}{4}$ -yard gasoline shovel from Northwest Engineering Co.

Missouri-Kansas-Texas, 33-ton locomotive crane from American Hoist & Derrick Co.

Bingham & Taylor Corporation, Buffalo, has been formed with capital of \$150,000 to take over and expand company heretofore operating as Bingham & Taylor, with foundry at 575 Howard Street, specializing in production of electric steel castings. New organization will continue in same line. It is headed by James W. and William J. Gibney.

United States Hoffman Machinery Corporation, 329 Temple Street, Syracuse, N. Y., manufacturer of clothes-pressing machinery, has awarded general contract to Dawson Brothers Construction Co., Union Building, for two-story unit to cost about \$75,000 with equipment. Portion of structure will be equipped as foundry.

Lincoln Radiator Corporation, Utica, N. Y., will remove to North Tonawanda, N. Y., on Aug. 1. W. S. Murray is general manager and Elmer S. Hering, treasurer.

Fitzgibbons Boiler Co., Inc., Oswego, is planning to erect a foundry on property adjoining its plant. Homer Addams, 570 Seventh Avenue, New York, is president of company.

Cleveland

CLEVELAND, June 25.

MACHINE-TOOL sales were light the past week and were confined to single machines. Little new inquiry developed. There are indications of a slowing down that usually occurs in the summer. However, the volume this month is expected to be about the same as in May. The market is dull in Detroit where several automobile manufacturers have sharply curtailed production previous to bringing out new models. The automotive industry is well equipped and only a moderate demand for machines for replacement and to fill in is expected from this source during the next few weeks.

Plans are being prepared by Ohio Foundry Co., 2469 East Seventy-first Street, Cleveland, for a one-story addition to No. 2 plant, 150 x 200 ft., to cost close to \$100,000 with equipment. Carter-Richards Co., Engineering Building, is architect and engineer.

Electric Auto Light Co., Center Street, Fostoria, Ohio, manufacturer of automobile starting and lighting equipment, is reported planning an addition to cost more than \$45,000 with equipment.

Snappy Radiator & Battery Service Co., 736 Cleveland Avenue, S.W., Canton, Ohio, will ask bids early in July for one-story addition, 40 x 85 ft., to cost about \$30,000 with equipment.

Heller Brothers Co., Newcomerstown, Ohio, manufacturer of files, rasps, tools, etc., has awarded general contract to Burger Iron Co., Akron, Ohio, for one-story unit, totaling about 40,000 sq. ft. floor space, to cost more than \$85,000. Company has been removing plant from Newark, N. J., to this location and carrying out expansion program.

City Ice & Fuel Co., 6611 Euclid Avenue, Cleveland, has plans for one-story ice-manufacturing plant to cost about \$75,000 with equipment.

Thomas Larson, 433 Mead Street, Zanesville, Ohio, is at head of project to construct and operate a local automobile

service, repair and garage building, to cost close to \$150,000 with equipment.

Bluffton Mfg. Co., Bluffton, Ohio, manufacturer of washing machines, small gasoline engines, cream separators and stock founts, is moving its plant to Findlay, Ohio. H. D. Zehrbach is secretary-treasurer and general manager.

Cincinnati

CINCINNATI, June 25.

AS the end of June approaches, machine-tool builders, in checking over the volume of orders for first half of the year, find that business showed an increase of approximately 15 to 20 per cent over that in the same period of 1927. In fact, several important manufacturers report gains of as high as 30 per cent, but the experience of others brings the general average down somewhat. While a considerable percentage of the total sales was derived from the automobile industry, buyers in that field played a lesser part in purchasing machine-tools than in the previous year. Probably the outstanding feature has been the consistent sales to companies in many different industries, this class of business having been the best in several years. Machine-tool executives agree that the volume of orders placed in the past six months and the rate at which production has been sustained during that period have been especially satisfactory, in view of conditions prevailing in industry in general.

Builders are hesitant about venturing predictions for the last half of the year, but the general opinion is that buying should continue at a fairly steady pace during the next six months, possibly with a slight letdown in July and August because of the usual seasonal lull.

Sales in June are running about on a par with those of May. Several companies have had better business than last month, but these increases have been offset by the falling off in orders reported by other manufacturers. Foote Brothers Gear & Machine Co., Chicago, has contracted for a 16-ft. extension boring mill, and the Sante Fe has bought a 20-in. locomotive journal turning lathe. A local builder has sold two lathes for shipment to Russia.

Liebel-Flarsheim Co., 410 Home Street, Cincinnati, manufacturer of physical therapy and X-ray apparatus, has acquired a five-story building at Third and Plum Streets and will expend approximately \$30,000 for improvements and additional equipment before removal.

Crane & Breed Casket Co., 1231 West Eighth Street, manufacturer of caskets, has purchased plant of O. Armleder Motor Truck Company, Central Parkway and will remove to this site. Approximately \$100,000 will be spent in improvements.

O. Armleder Motor Truck Co., Central Parkway, Cincinnati, is preparing plans for erection of a new factory for manufacture of motor trucks.

May-Fiebeger Co., Newark, Ohio, has moved its plant to former factory of American Motor Truck Co. in that city.

Bids will soon be asked by Samuel Hannaford & Sons, Dixie Terminal Building, Cincinnati, architects, for construction of six-story automobile service, repair and garage building, to cost about \$750,000 with equipment.

Board of Trustees, Wilberforce University, Xenia, Ohio, has plans for a one-story central power plant to cost \$120,000, of which about \$65,000 will be expended for equipment. Herbert B. Briggs, Ohio-Hartman Building, Columbus, Ohio, is State architect, in charge. Bids will be asked late in summer.

Inland Gas Corporation, Ashland, Ky., has awarded contract to Hope Engineering & Supply Co., Mount Vernon, Ohio, for installation of a pipe line for natural gas supply from fields in Knott and Floyd Counties, Ky., to Ashland and Olive Hill, Ky., about 140 miles. Project will include two compressor stations of 2000 hp. capacity.

Franciscan Fathers of Cincinnati, care of F. J. Shebley, Twelfth and Republic Streets, Cincinnati, architect, have plans for a three-story high school for boys on Carthage Pike, to be known as Roger Bacon High School for Boys, to cost \$750,000 with vocational training department. Architect will soon take bids on general contract.

Prest-O-Lite Co., 30 East Forty-second Street, New York, manufacturer of acetylene gas apparatus, etc., has acquired property at Louisville, and plans early construction of branch plant, to cost about \$40,000. Linde Air Products Co., Inc., an affiliated organization, has acquired adjoining site and is said to be arranging for immediate branch plant here, to cost close to like amount.

Sharondale Coal & Coke Co., Sharondale, Ky., is considering rebuilding of portion of plant, including tippie and head house, recently destroyed by fire, with loss reported at \$60,000 including equipment.

Cardinal Fliers, Inc., Louisville, care of Hugh Nevin, Louisville, architect, has plans for airplane hangar, 80 x 200 ft., with repair and reconditioning facilities at Bowman Fields, to cost about \$22,000 with equipment.

Monitor Sad Iron Co., Big Prairie, near Wooster, Ohio, is said to have plans for a one-story unit to replace portion of works recently destroyed by fire, with loss of about \$25,000 including equipment.

Gulf States

BIRMINGHAM, June 25.

BOND issue of \$4,000,000 will be sold by Palmer Corporation of Louisiana, Shreveport, La., N. C. McGowen, Shreveport, director, portion of proceeds to be used for extensions and improvements in natural gas properties at Monroe, Richland and Elm Grove, La., including pipe line construction.

City Council, Greenville, Miss., has plans for a municipal electric light and power house, to cost close to \$40,000 with equipment. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., are engineers.

Pure Oil Co., 35 East Wacker Drive, Chicago, has acquired four acres at Mobile, Ala., and plans construction of new storage and distributing plant, to cost in excess of \$85,000 with equipment.

Public Utilities Co., Meridian, Miss., R. C. Heady, manager, has plans for a one-story ice-manufacturing plant to cost about \$80,000 with machinery.

Texas Gulf Sulphur Co., Inc., Gulf, Tex., has plans for a steam power station with initial capacity of 7500 hp., in connection with development of sulphur properties in this section; a one-story machine and repair shop, forge shop and other mechanical buildings will be built. Plans are in progress for a housing development for operatives. With machinery installation for sulphur mining and distribution, entire project is reported to cost in excess of \$300,000. Headquarters are at 41 East Forty-second Street, New York.

Southern United Ice Co., Crystal Springs, Miss., will build an addition to ice-manufacturing plant, to cost more than \$45,000 with equipment. It also plans construction of two-story cold storage and refrigerating plant at Jackson, Miss., to cost more than \$50,000. G. E. Wells, Inc., 100 West Monroe Street, Chicago, is engineer in charge of both projects.

Corpus Christi Independent School District, Corpus Christi, Tex., has rejected bids recently received for new three-story high school, with manual training department, and will have revised plans drawn. It will cost upward of \$200,000. Hardy & Curran, Nixon Building, are architects.

Board of Education, Montgomery, Ala., is considering installation of manual training department in three-story senior high school to cost in excess of \$275,000, for which bids are being asked on general contract until July 31. Frederick Ausfeld, Shepherd Building, is architect.

City Commission, Denton, Tex., will soon begin plans for a municipal ice-manufacturing plant, approved by voters at special election June 16, to cost more than \$45,000 with equipment.

Helium Division, Bureau of Mines, Department of Commerce, Washington, is said to have plans for new helium plant near Amarillo, Tex., for which a fund of close to \$1,000,000 is available. Work will begin in fall. R. A. Cattell is chief engineer.

Bemis Brothers Bag Co., 601 South Fourth Street, St. Louis, is reported planning power house at burlap bag mill at Talladega, Ala. A machine shop will be built and an automobile service and garage. Entire project is estimated to cost more than \$1,500,000. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Moody Corporation, Esperson Building, Houston, Tex., W. L. Moody, 3d., president, has acquired oil properties in Howard and Glascock Counties, and is reported planning early construction of pipe line. An oil refinery is also contemplated.

Pittsburgh

PITTSBURGH, June 25.

THE appearance of the regular quarterly list of the Westinghouse Electric & Mfg. Co. has been the feature of the week. It contains about 50 items, calling for an expenditure of approximately \$130,000. In general, inquiry has improved somewhat, but actual orders have not increased.

Bids will soon be asked by Pennsylvania Transfer Co., 298 Duquesne Way, Pittsburgh, for one-story automobile service, repair and garage building, to cost close to \$90,000 with equipment. J. F. McWilliams, 127 North Highland Avenue, is architect.

Board of Education, 1500 Sixth Avenue, Altoona, Pa., is considering installation of manual training equipment in three-story and basement high school to cost \$750,000, for which bids are being asked on general contract until July 23. Hersh & Scholler, Commerce Building, are architects.

Harry M. Waugh, Bluefield, W. Va., railroad contractor, is planning construction of a sand and gravel washing plant with capacity of about 750 tons per day, and will soon purchase screening bins, conveying equipment, washing equipment, loading machinery, etc.

Logan Bus Terminal, Inc., Logan, W. Va., has awarded general contract to G. C. Johnson Construction Co., Bluefield, W. Va., for a new motor bus terminal, with service and repair facilities, to cost about \$85,000 including equipment.

Hubbard & Co., 6301 Butler Street, Pittsburgh, manufacturers of hardware, have filed plans for a one-story addition, 100 x 100 ft., to cost about \$45,000, for which general contract recently was let to Rust Engineering Co., American State Bank Building.

T. L. Rose & Sons, 1104 House Building, Pittsburgh, have been appointed to handle sales in Pittsburgh territory for Hill Clutch Machine & Foundry Co., Cleveland.

Milwaukee

MILWAUKEE, June 25.

MACHINE-TOOL builders report a continuance of moderate activity, with order books holding their own. Much of the call for equipment is for replacement, but the aggregate is sufficient to keep shops busy at the average for the first five months of the year. June sales are expected to equal the May volume by most shops.

Kohler Co., Kohler, Wis., manufacturer of enameled sanitary equipment, self-contained electro-generating plants, etc., has contracted with Immel Construction Co., Bana Building, Fond du Lac, Wis., for a dry kiln addition, 125 x 500 ft. Building and equipment are estimated to cost about \$250,000.

Armstrong Foundry Co., 1530 Junction Avenue, Racine, Wis., maker of gray iron castings, will take bids after July 2 for erection of a one-story shop addition, 75 x 80 ft., designed by J. Mandor Matson, local architect. An investment of about \$35,000 is planned.

Pelton Steel Casting Co., 832 Elliott Place, Milwaukee, has increased its capitalization from \$50,000 to \$200,000 and contemplates additions and general improvements in plant. Arthur J. Ehne is president and general manager.

Appleton Machine Co., 618 South Oneda Street, Appleton, Wis., closes bids this week for erection of a new foundry, 80 x 100 ft., designed by W. F. Dolke, engineer, Evanston, Ill. It will cost about \$75,000 complete.

Manitowoc Engineering Works, division of Manitowoc Shipbuilding Corporation, Manitowoc, Wis., has acquired manufacturing and selling rights of Speedcrane, formerly marketed by Moore Speed Crane Co., Chicago. Manitowoc

company's representatives in New York are Forsythe Brothers, 30 Church Street. The Moore Speed Crane Co., 2916 West Twenty-sixth Street, Chicago, will continue as sales representative in that territory.

Indiana

INDIANAPOLIS, June 25.

WORK will be started by Van Camp Hardware & Iron Co., 401 West Maryland Street, Indianapolis, on one-story pipe shop, 80 x 180 ft., for storage and distribution, threading and cutting, to cost close to \$30,000 with equipment.

J. B. Bayard, Vincennes, architect, has plans for a one-story automobile service, repair and garage building, 150 x 275 ft., to cost in excess of \$125,000 with equipment.

Neal Coal Co., Littles, Pike County, is said to plan early rebuilding of tippie and buildings at local mines destroyed by fire June 19, with loss close to \$90,000 including machinery.

Peabody Seating Co., North Manchester, recently formed with capital of \$300,000, will take over and expand local plant and business of Peabody School Furniture Co. It is proposed to provide additional facilities for manufacture of school seats, as well as seats for public halls, etc. New company is headed by J. P. Peabody and J. J. Wolfe.

Crown Machine Co., Tuxedo Street and Newton Avenue, Indianapolis, will rebuild portion of plant destroyed by fire June 17, with loss reported at \$35,000 including equipment.

St. Louis

ST. LOUIS, June 25.

BIDS will be received by David Stroud, city clerk, Kennett, Mo., until July 17 for equipment for municipal electric light and power plant, including one 120-hp. Diesel oil engine unit, direct-connected to 80-kw. generator, with exciter; and for two 240-hp. Diesel oil engine units, each connected to a 160-kw. generator, with exciters, switchboard and accessory equipment; also for complete power plant building. Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

Central Hardware Co., 811 North Sixth Street, St. Louis, is completing plans for one-story and basement storage and distributing plant to cost upward of \$80,000 with equipment. Leo F. Abrams, Chemical Building, is architect.

Oklahoma Railway Co., Terminal Building, Oklahoma City, has plans for one-story repair shop, 100 x 175 ft., to cost close to \$80,000 with equipment. G. B. Treat is company engineer.

Following recent stock issue of \$3,534,000 by Consolidated Gas Utilities Co., Blackwell, Okla., a portion of fund to be used for extensions and improvements in natural gas lines and properties, company has authorized sale of bond issue in amount of \$8,000,000, a considerable portion of fund to be used for purchase of plant and system of Larutan Gas Corporation, and for construction of 14-in. pressure pipe line from Amarillo, Tex., gas field to Enid, Okla.

Board of Education, Oklahoma City, Okla., plans installation of manual training equipment in new Capital Hill Senior High School, for which general contract has been let to Tankersly Construction Co., Tradesmen's National Bank Building, at \$425,940. Layton, Hicks & Forsyth, Braniff Building, are architects.

Page Milk Co., Merrill, Wis., is said to be planning installation of boiler plant and machine shop at milk condensery at Coffeyville, Kan. Entire project will cost close to \$180,000.

C. M. Conoway, Dallas, Tex., and associates, have plans for an ice-manufacturing plant, cold storage and refrigerating plant at Hoisington, Kan., reported to cost upward of \$200,000. Herman Brand, Hoisington, will be in charge of general construction.

Arkansas Airports Co., Pine Bluff, Ark., recently formed by Felix G. Smart, 309 West Second Street, and associates, is arranging for bond issue of \$75,000 and preferred stock issue of like amount, a portion of proceeds to be used for construction of airport, including hangar, repair and reconditioning shop, and oil storage and distributing station.

Board of Trustees, University of Arkansas, Fayetteville, has completed plans for one-story machine and pattern shop, 40 x 202 ft., and one-story foundry and forge shop, 30 x 152 ft. William N. Gladson, dean, school of engineering, is in charge.

McGraw Electric Co., Omaha, Neb., manufacturer of electrical products, has purchased business and property of Clark Electric Water Heater Co., heretofore owned and operated by Stoughton Mfg. Corporation, Stoughton, Wis. New owner will consolidate with its organization, and will develop facilities at Omaha plant for manufacture of Clark electric heaters and parts.

Ramsey Accessories Mfg. Corporation, manufacturer of piston rings and pistons, Holland, Mich., has purchased build-

ing formerly occupied by Davis Boring Tool Co., Spring and Forest Park Avenues, St. Louis, and will remove its factory and general offices to St. Louis. Company's branch at 4373 Duncan Avenue will be consolidated with main factory.

McNeal Machinery Co., Joplin, Mo., will handle sales in Kansas, Missouri and Oklahoma for Hill Clutch Machine & Foundry Co., Cleveland.

Detroit

DETROIT, June 25.

PLANT formerly operated by Albo Mfg. Co., St. Clair, Mich., has been secured under lease by Pouliot Boat Co., Detroit, care of Russell J. Pouliot, 2968 Newport Street, and will be operated by new owner following remodeling and repairs. It is understood that considerable portion of initial production will be given over to speedboats.

Standard Oil Co. of Indiana, 1011 Fourth Avenue, Detroit, has awarded general contract to A. R. Crowe, 6658 Wagner Avenue, for a new storage and distributing plant at Pontiac, Mich., consisting of main three-story unit, and one-story automobile service, repair and garage building, adjoining, to cost about \$150,000 with equipment.

Chevrolet Motor Co., 3044 West Grand Boulevard, Detroit, has completed plans for new plant at Saginaw, Mich., comprising foundry group for finished castings, with main one-story foundry, 280 x 530 ft.; one-story cleaning building, 110 x 320 ft.; two-story pattern shop, 100 x 183 ft.; one-story sand storage building, 100 x 220 ft., office, etc., to cost in excess of \$1,000,000. Albert Kahn, Marquette building, is architect. Contract for sand molds, conveying equipment, etc., has been let to C. O. Bartlett & Snow Co., Cleveland.

Evans Auto Loading Co., Dime Bank Building, Detroit, manufacturer of automobile loading equipment and devices, is said to be planning early erection of new branch factory at Eureka, Cal., for production of battery separators and kindred products. Initial plant will cost in excess of \$50,000.

In connection with expansion program at Lansing plant, now under way, Durant Motors, Inc., 250 West Fifty-seventh Street, New York, has approved plans for an addition to power station, 30 x 160 ft., to cost approximately \$200,000 with equipment. New boiler units of 2000 hp. capacity and other equipment will be installed. An air compressor plant will be erected on adjoining site.

Standard Automotive Parts Co., Muskegon, Mich., has plans for new one-story foundry, with laboratory building adjoining, to cost in excess of \$40,000 with equipment. Frank P. Allen & Son, Grand Rapids, Mich., are architects.

Officials of Chrysler Corporation, Detroit, have formed De Sota Motor Corporation of Canada, Ltd., to operate a plant in Canada, likely in vicinity of Windsor, Ont., for manufacture of De Sota motor cars, soon to be marketed by parent company in United States.

R. B. Frantz, 116 North Washington Avenue, Saginaw, Mich., architect, has plans for a three-story automobile service, repair and garage building, to cost about \$90,000 with equipment.

Rodgers Boiler & Burner Co., Muskegon, Mich., is said to be planning early rebuilding of portion of plant recently destroyed by fire, with loss close to \$40,000 including equipment.

Pacific Coast

SAN FRANCISCO, June 20.

BIDS will be received by contracting officer, Quartermaster B Corps, Fort Winfield Scott, Cal., until July 9 for Diesel engines for marine service, circular 1.

Yellow Cab Co., 1290 Bush Street, San Francisco, has plans for a three-story automobile service, repair and garage building, to cost about \$300,000 with equipment. Powers & Ahnden, 605 Market Street, are architects.

Firestone Tire & Rubber Co., Akron, Ohio, has asked bids on general contract for a one and two-story factory branch and distributing plant, 80 x 185 ft., at Los Angeles, to cost close to \$100,000 with equipment. Curlett & Beelman, Union Bank Building, Los Angeles, are architects. Local offices of company are at 1165 Figueroa Street.

Union Pacific Railroad Co., Pittcock Block, Portland, has plans for a grain elevator on Swan Island, to cost \$700,000 with screening, conveying, loading and other equipment. Engineering department is in charge.

Richfield Oil Co., 803 Savoy Hotel, Seattle, has plans for a new oil storage and distributing plant, to cost about \$80,000 with equipment.

Utah Gas & Coke Co., Salt Lake City, Utah, operated by Middle West Utilities Co., 72 West Adams Street, Chicago, has purchased gas manufacturing and distributing plants of Utah Power & Light Co., at Salt Lake City and Ogden, Utah. New owner will take possession July 1 and contem-

plates extensions and improvements, with installation of additional equipment.

Oregon Packing Co., Portland, plans construction of power house, 30 x 40 ft., in connection with new one-story canning plant, 165 x 275 ft., at Yakima, Wash., entire project to cost about \$50,000. L. T. Tennant, Yakima, is local manager, in charge.

Jacumba Land & Cattle Co., Jacumba, Cal., has plans for a new power plant at Jacumba Hot Springs, to cost about \$50,000 with machinery. C. E. Shattuck, Stack Building, Los Angeles, is architect.

Verde Central Mines, Jerome, Ariz., has approved plans for a new mill and concentrator plant, 70 x 160 ft., to cost in excess of \$175,000 with equipment.

Los Angeles Compress & Warehouse Co., San Pedro, Los Angeles, has plans for a new one-story cotton compress and distributing plant, 150 x 750 ft., to cost about \$400,000 with machinery. Site has been purchased on Twenty-second Street. R. J. Cummings, Bankers' Mortgage Building, Houston, Tex., is engineer.

Canada

TORONTO, June 25.

ORDERS are appearing from widely scattered sources and cover a diversified line of tools. Taken as a whole, current business is slightly off and sales are below those of a month or six weeks ago. Local dealers and builders, however, look upon the lull as a seasonal let up and believe that business will again become active after the summer holiday. A good demand is reported for small tools.

Imperial Oil Co., head office Church and King Streets, Toronto, is inquiring for complete equipment for its proposed new repair shops at London, Ont. Building will be one story, 50 x 50 ft.

Standard Diamond Drill Co., New Liskeard, Ont., will start construction work immediately on a plant, 100 x 100 ft., for manufacture of diamond drills, etc. Company is inquiring for machinery. Hill, Clark & Francis, have general contract for erection.

Dominion Bridge Co. is arranging for erection of an addition to its plant on Sorauren Avenue, Toronto, for fabricating structural steel of a heavier type than is possible at present. When completed company will be in a position to handle all kinds of structural steel from its local shops.

Town Council, Antigonish, N. S., will make additions to its plant and equipment to supply additional electric light and power. Plans call for installation of an oil engine of 120-hp., generating unit, etc., to cost \$15,000. John F. MacLellan is chairman of Council.

Link-Belt, Ltd., Toronto, has commissioned Ewart, Armer & Byam, Ltd., architect and engineer, Toronto, to prepare plans for a machine shop adjoining present plant. New unit will be 120 or 160 x 105 ft., arranged in a 45-ft. centre bay and two 30 ft. side bays. Connecting this unit and present factory will be a shipping building, 50 x 50 ft. Crane equipment includes a 10-ton and 3-ton bridge crane and a 5-ton overhead crane. Tenders will be called by middle of July, and construction is expected to start about Aug. 1.

Reid Brothers, 511 St. Catharine Street West, Montreal, have contract for an addition to cost \$25,000 for Canadian Tube & Steel Products, Ltd., 107 Hamilton Street, Montreal.

Arco Co., Ltd., 16 Liberty Street, Toronto, has appointed Chapman & Oxley, Northern Ontario Building, Toronto, to prepare plans for erection of a factory at Weston, Ont., to cost \$150,000.

Soper & Kent, 39-41 McNab Street North, Hamilton, Ont., are having plans prepared by W. L. Walsh, 304 Terminal Building, for erection of a three story and basement factory and office building, to cost \$40,000.

Hydro Electric Power Commission of Ontario, University Avenue, Toronto, has approved construction of a third power development unit for Nipissing system at Elliott Chutes. Total installation will be about 1800 hp., and construction will be undertaken this summer.

Western Canada

Contract has been awarded by British Columbia Electric Railway Co., to C. C. Moore & Co., Vancouver, B. C., and San Francisco, for the construction of a \$2,500,000 steam generating plant on Burrard Inlet, to be completed by September, 1932. Contract is for first 20,000-kw., turbo-generating units of a station which, it is expected, will ultimately contain four similar units.

Western Dominion Collieries, Ltd., 305 Trust & Loan

Building, Winnipeg, will start work soon on construction of a briquetting plant at Bienfait, Sask., to cost \$500,000.

Calgary Power Co., 315 Herald Building, Calgary, Alta., has started work on construction of a power development plant at Ghost River, Alta., to cost \$2,500,000.

Foreign

A COMPANY in Porto Rico has plans for a hydroelectric power project on Rio Blanco River in Luquillo Mountain district in eastern part of island, to include construction of power dam and installation of 42-in. penstock, 14,000 ft. long. Entire project will cost about \$800,000 with transmission line. Information regarding enterprise can be had at office of Bureau of Foreign and Domestic Commerce, Washington, reference Porto Rico No. 68612; also at office of American Consulate, San Juan, Porto Rico, J. R. McKey, assistant trade commissioner.

J. G. White Engineering Corporation, 43 Exchange Place, New York, will prepare plans and supervise construction of electrically-operated smelting plant and power station in Valdivia Lake section, Chile. New company has been formed to carry out project under name of Electro-Siderurgial de Valdivia. Generating station will have initial capacity of 30,000 hp., and smelter will occupy site of former steel mill at Port of Corral, on Pacific Ocean. Arrangements have been made with Bethlehem Steel Corporation for supply of iron ore from its properties at Tofo, vicinity of Valparaiso. Entire project is estimated to cost in excess of \$6,000,000 and bond issue of \$4,000,000 will soon be sold by new company in United States to provide part of sum.

East Prussian Power Co., Königsberg, East Prussia, Germany, is disposing of bond issue of \$3,500,000 in United States, a portion of proceeds to be used for extensions and improvements in power plants and transmission system, including completion of new steam-operated generating plant at Elbing, now under way.

A cement manufacturing company at Ketton, England, plans construction of new mill on local site, to cost more than \$1,400,000 with equipment. Information at office of Bureau of Foreign and Domestic Commerce, Washington; also at American Consulate, London, William L. Cooper, commercial attaché.

New Trade Publications

Small Pumps.—Tuthill Pump Co., 131 West Sixty-third Street, Chicago. Two folders of four pages each, illustrating and describing Typhoon pumps of model B and model C. Model B, designed for pumping oil to machine tools, is in two sizes, with capacities 30 and 90 gal. an hour. Model C is in six sizes, with capacities from ½ to 75 gal. a minute.

Chucks.—Union Mfg. Co., New Britain, Conn. Catalog No. 60, 64 pages, 5¼ x 7½ in. Independent chucks, three and four jawed, extra heavy, heavy and light pattern, iron body and all-steel, are described and illustrated. Faceplate jaws are included and sections are also devoted to geared scroll and geared screw chucks of universal and combination types. Boring machine, planer, milling machine, drill and a number of special chucks are shown. Dimensional data are given and price lists of complete units and parts.

Unit Air Conditioner.—Carrier Engineering Corporation, Newark, N. J. Bulletin of 16 pages describing in some detail, with illustrations, a unit air conditioner for industrial use. It is of a size which fits it for small factories. It is portable, requiring only simple water, steam and electric connections. It is driven by a motor of 1 hp.

Caterpillar Tractor.—Monarch Tractors Corporation, Springfield, Ill. Folder of four pages, illustrating and describing a gasoline-driven tractor weighing 13,500 lb. and designed for heavy work. The motor is of 60 hp., with a rated load capacity on the drawbar equivalent to 40 hp.

Packingsless Valves.—International Oxygen Co., Newark, N. J. Folder of four pages illustrating and describing a valve for high pressure, which dispenses with the use of packing. It is of drop forged brass and has a safety device operating at 2600 to 2800 lb.

Direct-Drive Pump.—Lowville Machine & Vise Co., Lowville, N. Y. Folder of four pages illustrating and describing a new pump mounted with engine as a unit on one base and designed for isolated use. It is driven by a four-cycle engine of ¾ to 1½ hp. in the three sizes, and is rated from 22 to 75 gal. a minute.

Semi-Portable Air Compressor.—Pennsylvania Pump & Compressor Co., Easton, Pa. Bulletin 140 illustrating

and describing a single-stage, double-acting air compressor driven from motor by multiple belts. The piston displacement is 65 cu. ft. of free air a minute.

Unit System for Pulverized Fuel.—Combustion Engineering Corporation, 200 Madison Avenue, New York. Catalog U-3 of 28 pages illustrates and describes the Lopulco unit system for burning pulverized coal. Several installation views are given, together with detailed description of the mill and its operation, the burner and furnace design.

Electric Furnace for Cyanide Hardening.—General Electric Co., Schenectady, N. Y. Bulletin GEA-972 of four pages illustrates a pot-type furnace for cyanide hardening at temperatures up to 1650 deg. Fahr. Four sizes are listed, with capacities ranging from 65 to 180 lb. of steel an hour. Inside dimensions of the pot vary from 8 to 16 in. in diameter and 12 to 24 in. in depth.

Steam Turbines.—General Electric Co., Schenectady, N. Y. Bulletins GEA-953 and GEA-957 illustrate and describe two types of steam turbines. The first is of a condensing and extraction type fitted with generator and ranging from 2000 to 7500 kw. The other is a mechanical-drive turbine, condensing or non-condensing, up to 600 hp. and up to 6000 r.p.m.

Thermaload Starter.—Monitor Controller Co., Baltimore. Loose-leaf folder (4 pages) describing standard sizes and junior sizes of motor starters, with illustrations of parts and price list for the equipment.

Flood Lighting.—Holephane Co., 342 Madison Avenue, New York. Folder describing a widespread light of 200 watts for general outdoor use. It is water-proof and dust-proof and is designed particularly for factory entrances, watchmen's gates, shipping platforms, warehouses, etc.

Electric Motors.—Louis Allis Co., Milwaukee, Wis. Bulletins 504, 505, 506 and 502A describing respectively, ship-ring motors, squirrel-cage motors, single-phase squirrel-cage condenser motors and inverted rotary converters. The bulletins are illustrated with installation views and sections and carry descriptions of the units covered.

Plugs and Receptacles.—Crouse-Hinds Co., Syracuse, N. Y. Bulletin 2111 of 16 pages illustrates and describes a wide variety of plugs and receptacles for making electric connections, particularly for portable machines and equipment. Prices and other particulars of the units are carried in the bulletin.

Dies and Taps.—National Acme Co., Cleveland. Booklet of 24 pages, devoted to the features of the company's line of self-opening die heads and collapsible taps and a chaser grinding fixture. Dimensional tables are included, and also tables showing thread sizes.

Portable Flood Lights.—Oxweld Acetylene Co., 30 East Forty-second Street, New York. Booklet describing the carbide light, which contains a carbide generator in the base, and a swivelled standard, holding or burner and reflector which can be pointed in any direction. Various styles operate from 5 to 12 hr. on one charge, at a reported cost of four to six cents per hour.

Concrete Roof Slabs.—Federal Cement Tile Co., 608 South Dearborn Street, Chicago. Bulletin of four pages illustrating and describing the use of long-span roof slabs of pre-cast concrete. The slabs are cast indoors under controlled conditions of temperature and moisture. They are designed particularly for industrial use and are recommended for roofs which are nearly flat.

Chain Hoists.—Union Manufacturing Co., New Britain, Conn. Folder of 16 pages illustrating and describing differential chain hoists together, with trolleys designed to run on I-beam rails. The price list covers units with capacities from $\frac{1}{2}$ ton to 20 tons.

Steel Building Products.—Milwaukee Corrugating Co., Milwaukee. The Milcor Manual No. 20-E of 96 pages covers a wealth of material on steel products designed for various purposes in building construction. The manual is a data book on both materials and methods, and features expanded metal lath, interior metal trim and steel channels for partitions and ceiling supports. Engineering data on the use of these materials in conjunction with concrete, and data covering steel dome construction for concrete floors, are features of the book.

Electric Hoists.—Box Crane & Hoist Corporation, Station E, Philadelphia. Six-page folder illustrating and describing hand-operated traveling cranes fitted with electric hoisting equipment. Electric traveling cranes are included also. The sizes range from $\frac{1}{4}$ ton to 50 tons. The company is celebrating its fiftieth anniversary.

Insulation of Breechings and Stacks.—Celite Products Co., Los Angeles. Bulletin 141 of two pages illustrates and describes the method of applying insulation of breechings and stacks of boilers and furnaces generally. Sections showing successive layers of insulation or other material explain the method.

THE LAST WORD

(Contributed by the Reader Service Department of The Iron Age Publishing Co.)

IN his autobiography, Andrew Carnegie relates a conversation with William Borntreager, who succeeded Andrew Kroman as superintendent of the mills.

When he came to the mills as shipping clerk, at \$6 a week, Borntreager had not a particle of mechanical knowledge, but he worked hard and before long so deep was his interest in steel-making that all of his expressions were based on mill practice. For example, one day he asked for a leave of absence, in order that he might visit Germany to marry his affianced and bring her to America.

"Of course, you may go," said the steel magnate, adding, "I suppose your sweetheart is a beautiful, tall, young German lady."

"Vell, Mr. Carnegie," was the response, "she is a leetle stout. If I had the rolling of her I give her yust one more pass."

MIKE has been tending the lawn, trimming the hedge and sweeping the walks in front of the Packard plant for 25 years. Twenty years ago an attack of pneumonia kept him home for three weeks, but he hasn't been late or absent since.

Twelve years ago Mike's oldest son started with Packard, and nine years later young Mike, the second son, followed suit. Like their father, they rival the clock in punctuality.

But Mike is not entirely happy. He has a skeleton in his closet. If you get to know him well, he may tell you in poor English or good Polish about his third son, the "black sheep" of the family. He started with Packard in the family fashion, and for five years all went well. But temptation came. He joined the factory baseball team, made good, and turning his back on parents, Packard and prosperity, signed on a minor league team. Now he is distinguishing himself with the Philadelphia Athletics.

It's no use to explain to Mike that the boy makes more in a few months of "play" than the remainder of the family combined makes in a year of labor. For the boy is the "black sheep" who strayed from the Packard fold, and, as Mike shakes his head and sighs, you know you will never get him to believe that his third son is other than a failure.

CANNED smoke (see The Last Word, May 31) is no joke, we are informed by R. F. Sherfy, engineer, Columbus, Ohio, but is a synthetic substitute for the historic smoke house. In other words, canned smoke is used in curing hams, bacon, fish, etc. "Unfortunate being he," rhapsodizes Mr. Sherfy, "who never cautiously and fearsomely entered that small, isolated, dark and smelly smoke house, got salt in a fresh cut in his bare foot, escaped without getting scalped and ran frantically to the horse trough for relief."

Mechanically operated assembly lines are forbidden in Australia. The assembly line itself is permissible, but it must not be power-driven. In other words, the worker sets the pace. Nor are piece work rates allowed.

You might think that such restrictions as these would make the cost of manufactured goods high in Australia. They do.

Charles L. Wood is general manager of sales for the Carnegie Steel Co. His assistant is John E. Woods.

If your life has not been as stainless as it might be, and if you can't stand the heat, place your order now with the Asbestos Burial Casket Co., Lowville, N. Y.

Herbert Hoover makes a strong bid for the business paper vote, for recently he said, "Only those may hope to succeed who are informed." Which is another way of saying, "Read your trade paper if you want to get along."

A. H. D.

